The Builder.

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The Thames Barrage Scheme.

VARIOUS remedies have been proposed within recent years for the present unsatisfactory condition of the Port of London, but notwithstanding the wisdom that is said to attach to a multitude of counsellors, nothing has been done. The Royal Commission on the Port of London, the Board of Trade, the Thames Conservancy, the London County Council, and the Dock Companies, have advocated dredging as a remedy for the insufficient depth of water in the tidal river for modern steamships, and as a partial remedy for delays caused by the necessity for tide-waiting opposite Tilbury and outside the dock entrances. Nothing has been suggested by any of the authorities mentioned for the purpose of removing the dangers now attending navigation, and which result from the flow and ebb of tides in a crowded river with narrow channels and many bends. No proposal has been made for reducing the present high charges for piloting vessels, and for discharging their cargoes by barge and otherwise. The suggestion is made by several authorities that a port trust should be constituted to purchase the undertakings of the dock companies, to deepen the channels by dredging, and to establish uniform regulations and charges.

In the Session of 1903 the Government introduced a Bill with the object of giving effect to the Report of the Royal Commission, and finally abandoned this measure in the following year. The London County Council are now promoting a Bill for the creation of a port authority on which the Council would have a predominant representation, and the Thames Conservancy Board have introduced a rival Port of London Bill. It may well be doubted whether Parliament will sanction either of these measures, but in any event their introduction and discussion may have the useful effect of rousing the Government to take action.

Another measure to be introduced for the consideration of Parliament during the coming Session is that which provides for endocking the river by the construction of a barrage between Gravesend and Tilbury.

Thus two alternatives will be submitted to Parliament; one involving the purchase of existing docks, the construction of new docks, and dredging operations extending over a period of ten years, at a cost which has been estimated at 37,000,000*l*., and the other including nothing but the construction of a barrage and subsidiary works, at an estimated cost of a little more than 4,000,000*l*.

One effect of the first scheme would certainly be to remove various undesirable conditions resulting from the regulations of conflicting and overlapping authorities, but no improvement would be effected in the prohibitive charges for piloting vessels, and for loading and discharging cargoes, and the dangers of navigation would not be reduced. The scheme does not give promise of any reduction of the present excessive dues, except by a heavy charge upon the overburdened ratepayers of the metropolis. The foregoing points are mainly of administrative character, and although our object in this article is to deal chiefly with engineering matters, they cannot be shut out entirely from consideration. On the whole, it must be admitted that the operation of a single port authority would be to ameliorate some disadvantageous conditions from which the port now suffers, while of necessity leaving others untouched.

Turning now to the question of dredging, we may say briefly that the proposal is to form a channel 600 ft. wide in the middle of the stream with a minimum depth of 30 ft. at low water, or about 15 ft. below the natural bed of the river, The cost of this work has been estimated at 2,500,000*l*. This scheme may appear to involve no difficulties, but consideration shows that several exist.

In the first place, it is impossible to deepen the channel above the Thames Tunnel, as the crown of that structure is too near the present bed of the river, and an injunction has already been granted against the Thames Conservancy prohibiting that body from dredging over the tunnel. This difficulty excludes the Pool from any benefit from the suggested new channel. Next, we are confronted by the probability that the channel might be filled up again almost as quickly as it could be dredged.

The experience of Glasgow is that, having spent 7,000,000*l.* in dredging the Clyde, nearly one million cubic yards of material have to be removed from the river every year at a heavy cost. In the case of the Thames, with a far more powerful scour, and a much greater tidal range, the difficulty and cost of keeping the channel open must be considerably more.

Again, we must not lose sight of the fact that the existing trough, of which the cross section has a slope of from 20:1 to 50:1, has been formed as a result of natural conditions, and that any artificial alteration of its contour means a direct conflict with the forces of nature—a kind of warfare that inflicts always heavy loss upon the attacking party. The loss in the case of the Thames may be expected from two directions. Heavy and continuous dredging will probably be necessary to maintain the channel, and injury to the banks and river walls may follow the inward movement of material from the foreshores. The experience of Glasgow is sufficient to justify apprehension on the first score, and actual experience on the Thames shows the reality of the risks presented by the second. As an example we may cite the subsidence of the river wall at Barking as the result of the very mild dredging work hitherto conducted in the lower reaches of the river. At Boulogne, again, recent dredging operations have resulted in the collapse of some hundred yards of the quay, the masonry having cracked through from top to bottom. Engineers are now engaged in the endeavour to secure new foundations for rebuilding the walls, but the work is by no means completed. Although this case is not precisely analagous to that of the Thames, it is sufficient to suggest caution. If a deep channel were formed from London to Gravesend it is highly probable that the efforts of nature to restore equilibrium would cause the unstable material at the bed of the river to slide down, with consequent injury to banks and walls for many miles.

Finally, we have to bear in mind the fact that the formation of a deep channel will increase the tidal volume and the strength of the current, with a proportionate increase of the tidal range. These effects involve greater risk of flooding during exceptionally high tides, and further reduction in the depth of the river at low water.

The difficulties recapitulated do not constitute insuperable obstacles to dredging as a remedy for some defects of the Thames, but they are sufficient to show that the proposed method of treatment must not be authorised without the fullest inquiry, and if once commenced must be conducted with the greatest care and with due provision for guarding against possible injury to the river banks and adjoining property.

Let us next examine the alternative scheme for endocking the Thames by means of a barrage. This proposal was first outlined in the year 1885 by Mr. James Casey, who read a paper on the subject last week before the Civil and Mechanical Engineers' Society. Before discussing the points raised in this communication, it may be convenient to describe briefly the constructional features of the proposed barrage and auxiliary works. The details of these have been worked out by Mr. T. W. Barber, M.Inst.C.E., and the previously mentioned estimate of cost is based upon the drawings of this engineer. The Gravesend end of the barrage is placed a little below the town pier, and the Tilbury end below the railway station near a point known as the World's End, and provides for vehicular and pedestrian traffic on the top and for railway traffic in a subway. According to the drawings the section of the Thames barrage is somewhat similar to that at Assuan on the Nile, but proportionately wider. The upstream face has a slight batter commencing at low-water level, the downstream face having a batter of about 1 to 2 from ordnance datum downward, and a concave projection near the top. The foundation rests upon solid chalk, and below the centre of the section is continued in a downward direction to provide for the formation of a railway tunnel 25 ft. high by 28 ft. wide with two sets of rails. On each side of the Parliamentary and municipal boundary in the middle of the river, are two navigation locks, the inner measuring 1,000 ft. long by 100 ft. wide, and the outer 800 ft. long by 80 ft. wide. Each of the four locks is furnished with internal gates in addition to those at the ends, so that the locks may be used in long or short lengths as desired, each of the outer locks being capable of division into two compartments 300 ft. and 500 ft. long respectively, and each of the inner locks into two compartments measuring 300 ft. and 700 ft. long respectively. The level of the lock sills is placed at 35 ft. below low water level, or about 10 ft. above the bed of the river. A projecting pier between the two inner locks on the downstream side will furnish accommodation for an electric power house, and it is proposed that current shall be generated by dynamos operated by water power. At the end of the pier a pilot tower would be erected from which signals for the regulation of traffic will be given, and the locks, bridges, and sluices will be controlled. On each side of the locks a number of adjustable steel sluices would be provided at the top and bottom of the barrage, of area sufficient to regulate the flow and necessary scour of the river bottom during ebb tide. According to the preliminary drawings the top of the barrage is about 5 ft. above Trinity high-water level, but in view of recent high tides it would be wise to make a further increase in the height so as to keep the roadway well above the water under all circumstances. The proposal is to build the barrage of mass concrete faced with granite. All the main features of the work appear to have been thought out carefully, and from a purely constructional standpoint there is no doubt that a dam could be successfully built on the site proposed.

As to the satisfactory operation of such a work river engineers and port authorities may not unreasonably entertain doubts. The author of the scheme, who, as a naval architect, has been professionally connected with the river Thames for nearly forty-five years, puts forward in his paper several strong arguments in favour of the barrage. We agree with his contention that the establishment of permanent high-water level between Gravesend and Teddington would at once remove the difficulties and inconveniences now attending the navigation of the river.

The deep water basin so provided should be of immense value to the Admiralty, rendering available for the British fleet a harbour in touch with the Royal Victualling Yard at Deptford, the Royal Arsenal and Gun Factory at Woolwich, and with the Dockyard at the latter place, now abandoned, but quite capable of resuscitation under more favourable conditions. Further, the tunnel affording railway communication between the Northern lines and the South Coast should be of great advantage, relieving London of much unnecessary traffic, and placing at the disposal of the Admiralty and the War Office a valuable connexion in time of need.

By means of the barrage the present unsightly foreshores of the river would be covered. Vessels and barges would be able to enter the docks and draw up alongside wharves at all hours of the day, the flooding of low-lying areas from the sea would be a thing of the past, and the usefulness of the river as a highway for traffic would be vastly increased. These and other evident advantages must be admitted, but the possibility, or, as some well-qualified experts think, the probability of accompanying disadvantages of most vital character must not be overlooked.

The most important of all the objections that have been made against the project is that the navigable channels below the barrage will become silted up owing to the prevention of flow and ebb in the tidal river. On this point an engineer with a wide experience of Indian rivers has expressed the opinion that the construction of the barrage might mean the destruction of the Port of London; while another engineer, with an equally extended experience of river-regulating works in India and in Egypt, has stated the more guarded view that the barrage might result in the silting up of the lower channels. That an increased deposition of silt will take place seems to be highly probable. The point for consideration is whether this tendency can be counteracted by means that are economically practicable. It should not be forgotten that the natural action of the tides will still continue up the river as far as Gravesend, and that the ebb will be assisted by the flow of water from the locks and the overflow sluices of the barrage. If necessary, it could be further assisted by opening the scouring sluices at the base of the dam. As the volume of the water held up will be equal to nearly 5,000 million cubic ft. no difficulty should be experienced in providing for effective sluicing. But if these means prove insufficient for maintaining the waterway, recourse must be had to dredging, which seems, however, a less arduous undertaking than the dredging of 26 miles of the river as proposed by the Royal Commission. In connexion with tidal action, we may point out that at present the flood tide brings in more silt than the ebb tide carries away,

because the latter being weaker gives more time for the deposition of suspended matter. This view is supported by the report of the Charles River Committee, a body appointed by the Commonwealth of Massachusetts "to consider the advisability and feasibility of building a dam across the Charles River" discharging into Boston Harbour. In many respects the conditions of this river resemble those of the Thames, and it is worthy of note that after exhaustive investigation by engineering, medical, sanitary, biological, and geological experts, the construction of the dam was finally decided upon, and authorised by the Legislature in June, 1903. We believe this to be the first instance in which the endockment of a tidal river has been undertaken. Hence the completion of the works will be awaited with great interest by all who are concerned in similar projects.

With regard to the precise effect of a barrage at Gravesend upon the Thames no one can speak with absolute certainty until the most searching inquiry has been made. Looking at the whole matter with strict impartiality, we think that the proposed scheme of dredging would involve far more burdensome expenditure than its advocates imagine, while the advantages gained would be comparatively small. On the other hand, while admitting the complete regeneration of the Port of London that would follow the creation of the barrage if the views of its promoters be correct, we are not yet prepared to accept those views in their entirety. But we have shown that there are reasons for believing that the construction of the barrage might exercise no prejudicial influence on the lower channels of the tidal river, and this being so we are strongly in favour of the fullest inquiry into the merits of the project.

NOTES.

Water Rights. IMPORTANT as the provision of water to large cities undoubtedly is, the rights of other people must not be infringed. This is a condition which is likely to cause far more trouble in the future than it has done in the past. Since the wave of municipal government has passed over the entire length and breadth of the land, water rights have been mapped out, and closely watched by those to whom they properly belong. When arranging for their Welsh water supply, the Birmingham Corporation were obliged to guarantee the supply of 27 million gallons daily to the river Wye as compensation water to set off the submersion in their reservoir of the Elan and the Clerwen, both these being tributaries of the Wye. Finding it desirable to command further supplies, the Corporation propose to ask Parliament for sanction to reduce the amount of compensation water by 7 million gallons daily. This would be a very cheap way of obtaining an increased supply, but the county and town councils along the Wye valley are very wisely combining to defeat the scheme. As matters now stand the flow of water down the Wye is not too plentiful; and any further diminution would be distinctly prejudicial to the river itself and to the owners of property on its banks.

The Government and the Isle of Wight Coast. IN spite of protests by the local authorities the War Office continues to rob the foreshore at Whitecliff Bay, with the acquiescence of the lord of the manor. Finding the War Office obdurate, and the Board of Trade unwilling to interfere, the Rural District Council have now sent two reports to the lord of the manor in the hope that he will forbid further removal of shingle. One report is in the form of a further letter from Mr. Colenutt, F.G.S., who, having studied the geological features of Whitecliff Bay for the last thirty years, states that the denudation of the beach will inevitably cause disastrous erosion of the cliffs along the whole sweep of the bay, and points out that the waves are already washing away parts of the cliff that have not previously been touched by the sea. The second opinion is from Sir Archibald Geikie, who entirely corroborates the views of the local expert. Whether the appeal will be successful or not we cannot venture to predict, but as the lord of the manor is a retired Army officer he may not like to take any unfriendly action with regard to the War Office. After all, the chief offenders are the officials of His Majesty's Government, who claim absolute authority over the foreshores, and are now setting a most pernicious example to other evildoers throughout the kingdom.

Heavy Motor Cars. THE new order of the Local Government Board with regard to heavy motor cars, which will come into force on March 1, will cause some trepidation to the ratepayers. The maximum weight of motor cars has been increased from three tons to five tons, and the joint weight of the motor and its trailer may be as much as six and a half tons. The loaded car may weigh with its load twelve tons, but the weight borne on any one axle is not to exceed eight tons. It is a matter of common experience that such weights, not supported on rails, are incapable of being taken along roads made up in the ordinary way without causing considerable damage, whatever precautions are taken as to the width of the tyres. Already there is a very strong feeling in country districts on this subject in connexion with traction engines. Because one or two persons choose to employ traction engines in their business the roads during the winter are made impassable for both vehicular and foot traffic, and the amounts recovered by the authorities for extraordinary traffic in no way compensate the individual. Motor cars not working on the same route day by day will not even be liable to make any compensation, and this development of motor traffic may be the cause of great injustice to the rate-payers.

Drains in London Schools. SOME of the managers of the non-provided or former "voluntary" schools in London seem to be rather troubled because the London County Council has directed an inspection of the drains of the non-provided schools, which is now being carried out. It is a most desirable proceeding, and is a necessary preliminary to any demand by the Education Authority for sanitary work on this point. It is obvious that the drains of every school should be periodically tested. Many outbreaks of illness are probably due to bad drainage in elementary schools, and we should like to see this step of the London County Council followed all over England, and continued year by year. There are many of the higher schools of the country which would benefit from a similar procedure.

Building By-laws as to Sheds. MR. CLAUDE ROBSON, the engineer to the Willesden District Council, in his last annual Report, mentioning the case of two sheds built in contravention of the by-laws, observes that this question of wooden sheds is a difficult one to deal with, and requires a new by-law. An official can only recognise the strict letter of the by-law, according to which it is impossible for anyone to build or place a wooden shed in his back garden, be it ever so small, unless he can claim exemption from the by-laws under clause 2, sub-sections h, i, or g. This seems unreasonable, but the difficulty is where to draw the line, as a multiplication of these sheds, or the erection of wooden buildings of considerable capacity, become very unsightly, and may prove dangerous in case of fire. A by-law, adds Mr. Robson, is required exempting sheds under a certain size.

Proposal for the London County Hall. MR. A. R. BENNETT sends us a pamphlet with description and illustrations of a scheme for a new bridge over the Thames, with a roadway commencing at St. Clement Danes church and connecting with two new thoroughfares on the Southwark side, with the proposal to build the new County Hall *on* this bridge, extending over six of its proposed eight arches. It is undoubtedly a picturesque idea, but it is useless to propose it, for two reasons. In the first place, neither the Thames Conservancy nor whatever authority may succeed to them would now permit a bridge to be built across the Thames with the number and the area of piers that would be required to carry the proposed structure—it would be too great a throttling of the river; and secondly, unless the bridge were made of a most abnormal width (which would be an increased objection under the first head), the necessarily long and narrow plan of the County Hall which would result would be a very inconvenient one; such a building requires a square type of plan, with internal communication as concentrated as possible. Under present-day conditions, in such a city as London, and with such a river as the Thames, a scheme like this is purely Utopian. It is no use to reproduce views of old London Bridge; they are very picturesque, no doubt, but they belong to a state of things that has passed away for ever.

A Market Cross for the City. IN accordance with the terms of the recent Lena Brown bequest to the Corporation of the City, the civic authorities have decided to open a competition, under

the assessorship of the President of the Institute of Architects, in respect of designs to carry out that lady's intention. The testatrix directed by her will that a portion of her estate should be applied to the erection, apart from the purchase of the site, of an ornamental structure to be designed after the Gothic style, and with certain specified restrictions as to the materials employed, which shall take the shape of a market cross, to serve also as a street refuge or clock-tower, in the central portion of London. It is a great pity that the donor, for want of the best advice, should have made the mistake of fixing a "style," and that style the Gothic; thereby precluding any chance of the cross rightly representing the art of the present day.

Mr. Clausen's Lectures on Painting.

MR. GEO. CLAUSEN delivered on Monday afternoon the first of his four lectures to the Royal Academy students on Painting. There was a very large attendance of visitors. The subject was "Truth to Nature" and "Style," considered together. Quoting Reynolds to the effect that the study of nature was the beginning and end of all theory, and that we could have no idea of beauty superior to nature, he observed that rules of art only taught us different ways of seeing nature. All truth to nature was not equally commendable. "Style" in its broader sense meant the expression of that which was typical, as we saw in such a figure as the Ilyssus. Faces and figures varied, but all were referable to a normal type which was to be expressed in art. Style did not lie in symmetry or proportion; many of the Tanagra figures were deficient in those qualities, but they all had style. Throwing on the screen enlarged views of some figures from Roman coins and sculpture, he showed how on the small scale all unnecessary detail was omitted, the figures being reduced to simplicity of line. It was well to study especially any work which compelled our admiration, and find the reason of its excellence. A return to the antique, after the study of the natural figure, was useful as showing what constituted style. It was to be remembered that we could approach nothing in a spirit of absolute detachment; we inherited the methods of seeing nature of those who had preceded us, and a study of their work was helpful. A man whose natural talent was for *genre* or Still Life should not attempt imaginative work against his nature; style could be shown as well in simple subjects as in loftier ones. What kept a work living was the artist's perception of the essential type. To the excuse "I did it from nature," in reference to a faulty work, the answer might well be—"Is that all you saw in nature?" Rousseau said "everything springs from the universal," and a painting of a stone might be of interest if it represented what was universal in nature. This view of art led to simplifying design, as illustrated in Millet's drawing of a girl seated by a stream; there seemed at first sight to be little in it, but it was in its simplicity that its power lay. Watts had given him (the lecturer) a piece of advice, when he complained of the difficulty of getting a model posed as he wanted, and said "one has to trust to memory." Watts replied that knowledge was better than memory; if you *knew* the exact shape of a bone you could draw it in any position. There was a great difference between "knowledge" and "skill"; it was not always the most skilful executants who succeeded in the end. The greatest works attracted by their apparent simplicity; they produced the feeling that you could go home and do the same thing. It was true that you could not, but that was the impression produced by the simplicity of great work. Mr. Clausen concluded by quoting from an ancient Chinese artist some maxims which showed that the aims of the best artists were then much the same as they are now. "If you want to work without rules," was one of these sayings, "first follow every rule."

Society of Fine Arts

THE twenty-one water-colour drawings by Miss Ruth Dollman, which occupy one wall in one of the rooms of the Fine Art Society, are of no ordinary excellence. They represent true feeling for nature, and for landscape composition. "Hares in the Coombe" (6) is the title for what is really a landscape in the downs, with beautiful gradations of distance; "Afternoon" (8) is a scene of the same kind, noteworthy also for the tender and delicate light in the sky over the distance. Among landscapes with more incident in them are "Ditchling Beacon" (13) and "The Two Mills" (16), both of them especially good in regard to composition. "The Old Road" (14), a bit of a disused road in a chalk district, makes an interesting picture out of almost, one may say, no material at all. Some studies of foreground subjects, especially "Easter Bloom" (4) and "Cowslips" (12), show that the artist has a capacity for the treatment of detail as well as of distance, and two life-size flowers, "Narcissus" (1) and "Daffodils" (21), are decoratively hung as the two flanking objects at each end of the line. The exhibition, though small, is a very interesting one.

Sketches of India.

MR. GOODMAN'S pictures of Indian scenes and sites, exhibited at the Leicester Gallery, are for the most part rather what we call topographical art; that is to say, they are more interesting as illustrations of the scenes than for their intrinsic artistic quality. The large painting of "The Himalayas from Darjeeling" (46) is an effective landscape, as well as one or two smaller Himalaya pictures; otherwise the sketches of different places are simply sketches of the places; and the architecture is nowhere very well treated. The Taj Mahal, with all its abundance of surface decoration, can hardly, even at some distance, appear in a bright sun as a perfectly flat whitish surface, a mere silhouette; and it is the same with other buildings introduced; the architectural character is not conveyed.

How to Obtain a Reredos.

THE following letter, received from an English church dignitary, furnishes an amusing example of the curious ideas some people have as to the way to set about getting an architectural design:—

"DEAR SIR,—I have to send out designs for a Reredos to be erected in my cathedral at ——— (a fine building, architecturally on the lines of Netley Abbey). It will stand at a good elevation, below three large Lancet windows.

"I should esteem it a great favour if you would be so kind as to furnish me with any designs suitable for such Reredos which may have appeared in recent Nos of the *Builder*. If you will be so good as to let me have them by *return* of post (with cost of same) I can send them out by next mail, and will also remit cost to you."

Whether our correspondent imagined that we sold designs for reredoses "by return of post," or whether the remittance was only to be the cost of the copies of this journal, is not quite apparent. At all events, it was suggested to him that a reredos designed for one situation was not likely to fit another, either in respect of dimensions or otherwise; that designs for reredoses lent to us for publication were not supposed to be made use of for new situations without the permission of the original designers; and lastly, that if there was an architect employed over the cathedral in question, could not he design a reredos?

THE INTERNATIONAL SOCIETY'S EXHIBITION.

THE Fifth Exhibition of the "International Society of Sculptors, Painters, and Gravers," at the New Gallery, is on the whole the most interesting they have held. There are no doubt some very bad and a good many rather commonplace pictures, but nothing so ugly and repelling as some of the works in last year's exhibition.

The collection is strongest in landscape, in which branch of art there are some very fine and a good many interesting and original works. Among these the first place must certainly be given to Mr. Bertram Priestman's large and fine landscape with cattle, "The Meadow's Stream" (178), which occupies a central position in the West Gallery; a painting broad in style but not overlooking or slighting detail, and full of light and air. Mr. Grosvenor Thomas's "Cluden Waters" (216), which occupies the centre position on the opposite wall, illustrates, on the other hand, the passing of the point at which breadth degenerates into confusion of forms; its general effect is powerful, but it wants charm and aërial effect; it is a large study for a landscape rather than a finished work. Among other landscapes in the same room Mr. Montague Smythe's "The House on the Marsh" (174), presumably suggested by a well-known gloomy romance, is a work of much power of effect, and that kind of sinister suggestion of melancholy or tragedy which gives to a landscape a kind of dramatic significance. Mr. Millie Dow's "Springtime in Cornwall" (175), a view over open country from a high foreground, is somewhat too naïve in style and execution, one result of which is that the distance does not recede sufficiently, and the effect is that of a diagram of a landscape rather than a view in the open-air; but it is not without its charm. Mr. James Paterson's "Edinburgh: Dawn" (182) is a fine effect carefully studied. Herr Ludwig Dill's "Gewitter im Moor" (192)—storm-clouds over an open common, suggests that he has a style of his own, though when we come to his next work, "Wachholder in Weiden" (197), we are perhaps tempted to think that what we took for a style is only a manner; however, in the "Gewitter" the clouds are finely handled, in broad masses of light and dark. Mr. Thaulow's "Suburbs" (202) is a comfortless-looking snow picture with a freezing river before the houses; Mr. Bruckman, in "The Heart of the South Downs" (230), reminds one of Maris, and is hardly inferior to his model; Mr. Peppercorn's "The Road by the River" (234) is a powerful composition, a little too ragged in the foreground trees; and Mr. Oliver Hall's "The After-math" (237) has a fine depth of shadow and largeness of style about it which remind one of a Rembrandt

landscape. Mrs. Dods-Withers's "Stirling Castle" (269) in the north gallery is too dark and heavy in tone, and Mr. Walter Sickert, in a large and (in one sense) carefully finished painting of St. Mark's, Venice (313), has succeeded in making St. Mark's also look dingy, which one had not before thought possible. A more satisfactory though less ambitious architectural picture is Mr. Sydney Lee's "The Barbican Gate" (317), the entrance to some old walled town, between round flanking towers with chequered masonry in dark and light squares. This, it is true, rather wants pictorial character, but as a painting of old buildings it is good. Mr. Mark Fisher has a landscape, "A Garden" (277), in which his peculiar spottiness of execution has rather wrecked the effect; there is no salient point in the picture. Mr. Jamieson's "At Dieppe" (281) and Mr. Raffaelli's "Paysage de Bretagne" (303) are works deserving of mention.

Among the figure pictures the finest undoubtedly is Mr. Lavery's "Polymnia" (235), to all intents and purposes a full-length portrait of a young lady in black standing by a piano, showing a noble and finely-painted head, and an attitude in which dignity and grace are combined. This is too graceful and not odd or jerky enough, however, to please the "advanced" critics, who apparently prefer M. Blanche's hard and stiff figure on the opposite wall, called "The Summer Girl" (195), of which it is difficult to say whether it has not been painted partly as a joke. Mr. Chase's portrait of Whistler (251) one may take to be entirely a joke (whether conscious or not), an attempt to out-Whistler Whistler in a portrait of himself. M. Carolus-Duran sends a rather hard portrait of a little girl of his own name (187), probably a little grand-daughter, painted with all his usual conscientious finish, but not very attractive in colour. Among other portraits are M. Blanche's of M. Rodin (255), looking rather like a government official addressing a meeting; and Mr. Lavery's of "Elizabeth Welsh" (308), which we do not like nearly so much as his "Polymnia." Figure subjects other than portraits are not very important, and it appears that it is among the tendencies at the International to imitate the manner of painters, living or dead, who enjoy fame among the irreconcilables. Mr. Chase's imitation of Whistler we have already mentioned; Mr. Walton's figure of a young girl under the title "The Portfolio" (298) is an obvious reminiscence of a well-known Whistler portrait of a child. M. Carrière's "Etude d'Après Nature" (300) is a painting of a man and woman in that misty undefined manner which this painter started as a new note, and in Mr. Livens's picture in the West Room, "The Builders" (173), we find M. Carrière at second-hand, in a picture of two children half seen through a fog; a picture clever in its way, but the trick is old now. Of course there is nothing visible to explain the title, for you cannot see what the children are doing; but that is another little joke of the new school, to give a picture some title which is quite inexplicable; that makes people look hard at it to find out its meaning. Then Madame Dorph, of Copenhagen, gives us an "Eve" (221) in the manner of Botticelli: and so on. Of the painters who have their own very individual manner there are two examples of M. Cottet, a painter who promised great things but has more or less wrecked himself in his search after dark and sombre effects, till it is difficult to see his pictures at all:

> "Darker and darker
> The black shadows fall,"

till the pictures give the idea of having been painted with brushes dipped in the ink-pot. Mr. Austen Brown will lose himself in the same track if he does not take care; he still retains warmth and richness of tone, though of a rather sombre kind; but his two pictures, "Weed burning" (194) and "Mowers" (248), both with fine qualities, show (the latter especially) the danger of overdoing a source of effect; in "Mowers" the figures have already become almost as ghosts in the gloom. When this kind of effect is once taken up as a special individualism in painting, the tendency always is to exaggerate it year after year, till it becomes a mannerism that leads the artist to wreck.

The South Gallery contains a good many very interesting works in black and white. There is a small collection of Vierge's grotesque but exceedingly clever pen drawings. Mr. Wolf, the American engraver, is represented by a series of engravings of the most delicate execution, though he does not always follow the best principle of wood-engraving, that of modelling surfaces by contour lines; there is one head, indeed, which is entirely shaded in vertical lines. Mr. Timothy Cole's engravings, of which there are four examples, though with less apparent delicacy of finish, are executed in a more artistic spirit, and represent the highe t class of art in wood-engraving. Mr. Pennell has a series of etchings of "The Sky-scrapers of New York," the tall buildings which have made modern New York a city of towers; these are very powerful and effective. There is also a large collection of the drawings of Frederick Sandys.

The Central Hall has been specially arranged for this exhibition, the spaces between the columns being filled in with temporary white screens, which are supposed to furnish an effective background for the sculpture, but on the other hand contract the visible space of the hall, and the dark spaces formed behind the screens are of course lost for exhibition purposes. M. Rodin's life-size plaster sketch of a recumbent female figure is a very fine idea for a work in sculpture, but merely roughed out, the feet being hardly modelled at all. Such a rough sketch would probably not find admission into an Academy exhibition at all, and is more in place as a studio study than as a work for exhibition; but it is part of the gospel of the New Art that one is to accept promise for performance. One of M. Rodin's grotesque fantasies is also shown in "La Main de Dieu," a colossal hand holding up a piece of rock against which a man and woman seem to cling. This is finished, but it is more curious than beautiful. The group in grey-veined marble of the Sphinx and her victim, by M. Glicenstein, of Rome, is evidently done under Rodinesque influence; it is a rather remarkable work, the effect of which is a good deal marred by the parti-coloured material in which it is executed. Mr. Toft's nude bronze figure, "Victory," is not sufficiently heroic and abstract in style for such a subject; it seems too much of a realistic reproduction of a nude model, the legs being rather too short, and the waist the pinched waist of a figure that has been laced into tight modern dresses. One has to go back to antique models for a figure to express this kind of ideal.

NEUFCHÂTEL-EN-BRAY.

THE history of Neufchâtel, though much the same as that of the rest of Upper Normandy, has sufficient individuality to make it interesting. It had, what so many of the Newcastles of England and Ireland have not, a past; and not like them new, in that it had never been old and merely a castle, and nothing else. Until the beginning of the XIIth century the town was known as Driencourt, and this name frequently occurs in Norman annals in reference to its lords; and it was not until Henry I. erected a new castle there that it began to be called "Noef Chastel." With the rest of the province, the town was lost to France in the wars of King John, and, although it was on the track of Edward III. in his raid through Normandy, it did not remain an acknowledged portion of the English Conquests after the treaty of Bretigny. But in the next century Henry V. took possession of it, with the rest of Normandy, after his siege of Rouen; and for nearly fifty years it remained in English hands until, in 1449, it was captured by the French under the Count d'Eu. While the country was divided by the wars of the religion, and English inroads by way of Dieppe were not infrequent, Neufchâtel, as a strong fortress on the high road to Paris, was of importance; but with the settlement of the religious difficulties in France, which culminated in the issue of the Edict of Nantes, English interference in the affairs of France became unlikely, and the fortifications ceased to be of value; and in 1496 Henry IV. ordered the castle and ramparts to be destroyed.

In its earlier and pre-military days one church served for the township of Driencourt, the church of S. Pierre, the ruins of which still stand by the mill-stream; but with its increased importance, and, perhaps, added population, in the XIIth century, two more churches were built in the higher parts of the town—one, S. Jacques, which has disappeared, and the other Notre Dame, which is still in use. Of these three churches few records have been published, but from what their remains show their history may be roughly sketched. Of S. Pierre, although founded before the XIIth century, nothing has survived but a small piece of a ruined apse of the XVth century or later, now converted into a dwelling-house. S. Jacques, which was a large church and once held the relics of Ste. Clotilde (now supposed to be deposited in Notre Dame), was severely damaged, if not destroyed, in 1591, during the civil wars, but was repaired or rebuilt, only to be again destroyed in the Revolution. Notre Dame, standing in the market square, surrounded by picturesque houses, in spite of fire, siege, and revolution, still dominates the town.

At the first building of Notre Dame, in the XIIth century, it was of the usual Anglo-Norman type, of much the same plan, if not of the same extent, as the present church, and with the usual central tower. Of this original church there only remain the piers and the external arcading of the upper part of the central tower, and these show that, although the original church was a cross church with aisles, it was nothing like so lofty as the present one. Probably the choir and transepts were rebuilt in the middle of the XIIIth century, and, if one may judge of the work by the restoration of it, in the best manner of the period. Whether the nave also was rebuilt at the same time is uncertain, though probably not, but in 1472 the whole church was nearly destroyed by a great conflagration. No doubt the spire of the central tower perished at the same time, for, when the repairs of the choir and the rebuilding of the nave were begun at the end of the XVth century, they commenced a massive tower at the west end. This tower, which is a remarkable specimen of its style and period, was never completed, want of funds and some weakness it showed in the course of its construction causing the work to be discontinued; but in its unfinished state, crowned with a lofty slate spire and pinnacles, it forms a most picturesque mass. It has a magnificent and lofty portal, with seated figures round the arch and that rich lace-work so peculiar to the latest phase of French Gothic; and above it is a rich flamboyant rose window in a deeply-recessed arch. All the work is in a very ruined condition, the carvings destroyed, and all much patched up with brickwork; but better so than in the over-restored condition of the east end and the interior. The north and south faces of the tower were prepared for great traceried windows, but, in consequence of the weakness that was showing, these were built up and a great buttress inserted in the centre of each. The belfry stage of the tower was never completed, but from the little that was built it would appear that they intended to cover it with rich stone tracery.

The nave of the church is of a date entirely subsequent to the fire, and is of the latest flamboyant mixed with renaissance details. The well-known architects, Grappin, of whom there were three generations, were working near by at Gisors, and Hector Sohier, of Caen, at Dieppe, on the east end of S. Jacques, at the same date, and to one of them may be attributed the design for the work. Many of the features, particularly on the south side, are quite classic; the capitals of the vaulting shafts are Ionic, and the mouldings of the great piers Roman. But the pendants to the vaulting, perhaps, are the most noticeable features, not only for their size, but for their Cupids' heads, vases, and other cinque-cento embellishments. The south transept was rebuilt at a little earlier period than the nave, more purely flamboyant, with an apsidal termination, and it contains a late and very rich entombment, with life-sized figures.

The choir, as restored, is a fine example of early work, and in many respects it is very English in its character. The aisles have a square ending, and the apsidal termination has no surrounding chapels; the triforium is pierced for windows, so that at the east end there are three tiers of windows over each other.

The town abounds in wooden houses, and, though they have been generally in the main streets refaced or plastered over, the gables and dormer windows cannot be disguised; and in the numerous side streets and lanes many of the houses can be seen in their original condition. One of such, known as the Maison des Templiers, retains externally a good deal of its ancient carving. Opposite the church tower is a *café* with the title, "Les Halles," which was no doubt the original market-hall of the town, and it bears a curious bas-relief

over the gateway of a cardinal's hat and the date 1621.

There was a large convent of Bernardines here, which has been destroyed, and the site of the church is occupied by a modern and ugly *hotel de ville*. In this building are housed the public library and a museum of antiquities of no great interest, but there is quite enough without them to tempt the traveller to put up for a day or two at the good old-fashioned Hôtel du Grand Cerf, at Neufchatel-en-Bray; and to him I would repeat the advice given by M. l'Abbé de Corde, not to drink, good though it is, too much cider, and to remember :—

"Jamais homme sage
Ne mongea fromage."

The arms of Neufchatel were anciently "Az. three castles arg., two and one," but they were augmented on the union of Normandy with France, or after the restoration in 1815, by "in chief, three fleur-de-lys or."

J. TAVENOR-PERRY.

MAGAZINES AND REVIEWS.

THE *Art Journal* opens with a very long article by Mr. Claude Phillips, on, or *à propos* of, the recently acquired Titian at the National Gallery claimed to be the portrait of Arisoto, and also claimed by some to be a work of Giorgione, whose art in some respects it no doubt resembles. Mr. Phillips considers it a genuine Titian. The article goes into many comparisons with other pictures, claiming the "Concert" at the Pitti Palace, hitherto considered (he says) as "the typical Giorgione" (we should not go as far as that), as a Titian. As far as feeling and expression go, the centre head seems to us to have more of Giorgione than of Titian about it. The unsatisfactory part of these critical disquisitions is that one never seems any nearer certainty after all the argument. An article on "Art Handiwork," to be continued, forms an accompaniment to some illustrations of various examples of what is called "Art Handiwork." The writer of the article seems to recognise that "efforts to reconstitute a perished ideal of life" are "liable to the dangers of artificiality." That is what we have always felt, and some of the things illustrated in connexion with this article show it; the music-room, for instance, "carried out by Goodyers" (the courtesy of "Mr." or "Messrs." seems to be considered out of place in connexion with "Art Handiwork"). The whole of this room design is a deliberate attempt at an acted simplicity; it all says "see how plain and simple this is, how devoid of pretence"; whereas it is itself a pretence of another kind; nor does it represent the music-room of a cultured society; it is a cottager's music-room, just as the four-post bed by Messrs. Heal is a cottage bedstead. Should the four-post bed be revived at all? is a question. We admit, as the writer says, that it does give dignity, but in crowded towns it is not a health-promoting piece of furniture; it may be allowable in roomy country mansions surrounded with air space. We have the same objection to Messrs. Heal's two wardrobes illustrated; they show how a perfectly simple thing may be agreeable through honest structure; but they have not the refinement which should appear in the furniture of a first-class residence. Messrs. Doulton's vases, which form another illustration, are rich objects with none of this over-acted simplicity; so is the silk damask by Messrs. Warner & Sons, which is an imitation however of the Adam style (the frequent mistake of saying "Adams" style is once more repeated in the title). The fact is, the very expression "Art Handiwork" in connexion with furniture and other such objects shows in itself that something is wrong. There has been no doubt art handiwork in former times, in objects specially made at great cost for kings' and noblemen's palaces; but in the days when all furniture was pleasing and in good taste there was, in the general type of production, no thought of "Art Handiwork"; a thing was made as well as possible and in a manner that interested the workman, and therefore the purchaser; that was the way of making it, and there was no thought of making it different from other furniture or of appealing to special tastes. As it is, the word "art," when used (rather ungrammatically) as an adjective, is a confession of a pose. Let people learn to make all furniture as well as possible, and encourage the workman to take personal interest in his work, and then all furniture will be art-furniture, only we shall hear no more of that irritating expression.

The *Burlington Magazine* contains three valuable articles; one on the sculptures in Lansdowne House, by Mr. A. H. Smith, with some fine illustrations; one by Miss May Morris, on the textile work known as "Opus Anglicanum," and represented now, we are told, by only about twenty or thirty pieces, chiefly copes; and one by Mr. J. P. Richter on "Early Christian Art in the Roman Catacombs." This last is the most interesting of the three, and it is a pity that it is not illustrated with some examples of the work described; but it is at all events a very good summary of the subject. Mr. Richter takes the view that the early Byzantine art in Rome is of interest not so much for itself as because it is a survival of a better Christian art which preceded it. "What is the quality which justifies interest in things so really tasteless and ugly as the mosaics of S. Lorenzo fuori la Mura, of S. Marco, of S. Maria Nuova? It is that they are petrefactions (*sic*), that is to say evidences of the pre-existence of living things, different to themselves, though formally similar. Romano-Byzantine art has the scientific value of a petrefaction." This we surmise is true, though we do not understand why "petrifaction" should be spelt wrong, twice over. There is another absurd mistake in the same number, in the title of a plate, "Hermes tying his sandle"; this is corrected on a slip, and is probably a printer's error; but where were the eyes of the "reader"? The first illustration to Miss Morris's article, the Syon cope, is a very good example of the system of design she draws attention to, in which figures are arranged in semi-architectural compartments radiating towards the circumference of the cope, which when displayed forms a half-circle, the object of the radiating arrangement being obviously to provide for the design showing in proper lines when the cope is worn, and when its semi-circular form is distorted; by the radiating arrangement the figures would appear to fall in with the lines into which the cope falls when in use. There are some interesting remarks on the difference in treating the modelling of features in English and in Florentine textile work of this class, illustrated by two diagrams showing the direction of the main lines of the needlework in each case. The Italian method seems to us far the best of the two; in it the eye is taken as the centre and the lines follow in enlarge-ing curves which finally blend into the curves of the chin and neck. In the English diagram there are separate centres of curved sewing, both on the cheeks and neck, which have no reference to the outline of the head or neck, and produce the effect of tattoo-ing, though this is probably not so prominent in the executed work as in the diagram.

The *Architectural Record* (New York) contains an article on and illustrations of the new premises of the Havana Tobacco Company, of which Messrs. McKim, Mead, & White are the architects. The firm advertised that they were about to open "the finest store" (Anglicè —"shop") "in the world," and the result, judging from the illustrations of their columned halls, seems to bear out their boast. Of course this is a very exceptional shop, intended only for the kind of buyers who purchase their cigars in large quantities and are indifferent as to price; but it shows the possibility of treating what is, after all, a shop, as a piece of monumental architecture.

The *Berliner Architekturwelt* contains some very interesting work in this month's issue. An article and a number of illustrations are devoted to an interesting building in the "Dorotheen-strasse," Berlin, which has recently been saved from destruction. This is the present "Royal York Lodge," originally built at the beginning of the XVIII. century (the date 1712 stands over one of the doorways) by the architect Andreas Schlüter, as the country house of the Minister of State, Ernst Bogislav von Kamec. The building is characteristic of the "villa" of the period; over the four entrances are life-size groups representing the four quarters of the globe, and on the walls are four small oval bas-reliefs representing Watchfulness, Wisdom, Forethought, and Discretion, as the four chief virtues of a minister. The gardens were laid out in the style of that period, having grottos and groves and a Mount Parnassus. The destruction of this building would have been all the more regrettable as it is perhaps the only remaining one of its kind, and one of the best examples of Schlüter's work. Among other illustrations of the number is a competition design for a Schiller Theatre at Charlottenburg, by MM. Reinhardt & Süssengorth, which quite escapes the usual commonplaces of theatre architecture, and one regrets that it is not, as far as appears, to be carried out. The plan, with its fan-shaped auditorium, is also of interest. Among the buildings illustrated is a new post-office in the Körnerstrasse, Berlin, a sensible but effective design in the mingled brick and stone architecture which seems to have been generally adopted for the German District Post-offices. As no architect's name is given, we may presume that this is an official building. The "Tiergartenhof," Charlottenberg, by Herr Baumgarten, is a good sensible piece of free classic architecture, free from the eccentricities which we too often find in modern German buildings. Some bookplates and a title-page to a romance, by Fraülein Wendtlandt, of Stegnitz, show fancy and imagination. Then there are portions of a new bridge in Berlin, the Rossstrassen Brücke, by Herr Hoffmann, the details of which are original and effective. There is much less of "l'art nouveau" in the number than we usually find.

In the *Architektonische Rundschau* the subject of sepulchral chapels (*Friedhof Kunst*) is continued; the illustrations are all taken, as before, either from American or German publications. France and England seem to be unknown countries to the editor of and writers in the *Rundschau*, which is certainly not as "all-round" as its title would imply. The Germans, however, are certainly very inventive in this class of work; the design by Herr Mobius, of Leipzig, illustrated in the article, is the best of the examples given. Among the large plates there is really nothing calling for special remark.

In *Technics* three serial articles are continued: "The Metallography of Steel," by Mr. Percy Longmuir, who gives further illustrations of hardened and tempered steel and points out the lamentable lack of scientific knowledge on the subject of steel hardening; "The Electro-Magnetic Theory," by Mr. Edwin Edser, dealing with the directions followed by lines of force under different conditions, the measurement of the electric current, and electro-motive force; and "The Elements of Chemical Engineering," by Dr. Grossmann, devoted to the illustration and description of fire and steam-heated evaporating vessels. Among the other articles only two or three possess any direct interest to our readers. Students of mechanical engineering will find in "Epicyclic Trains," by Mr. Thornton Knowles, various examples indicating applications of epicyclic gearing to modern machinery, and electrical students who are not already in possession of the paper read by Mr. H. D. Symons before the Institution of Electrical Engineers will do well to study the reprint commenced in this issue under the title of "Insulation and Insulators." A more generally useful contribution is one on "Recent Developments of Gas Lighting," by Mr. Thomas Holgate, M.Inst.C.E. The first part, appearing in the present issue describes and illustrates several types of gas burner, several of them well-known and others recently introduced. Tables containing data as to the consumption of gas and other particulars are included, and the article concludes with descriptions of automatic lighting apparatus, gas meters, and a carbonic acid recorder for use with water-gas plants.

Public Works includes an article by a French engineer, M. Arnodin, on "Crossing the English Channel," meaning, of course, schemes for dispensing with navigation. We are glad to see that the writer has common sense enough to pronounce emphatically against any Channel Tunnel scheme, on account of the immense risks attending it both in course of execution and afterwards.

"Even regarding matters in the most optimistic light and admitting the hypothesis that the tunnel could be pierced under the most favourable conditions, the problem of ventilation still remains to be solved, for it must not be forgotten that the tunnel would be over 31 miles in length, 20·5 miles of which would be under the sea. It is evident that such a distance cannot be traversed without ventilation shafts. Consequently, it would be necessary to form islets in the open sea for the installation of these shafts and also, of course, for their connexion to the tunnel. This would by no means be a simple matter with a head of water, which, as we have seen, would amount to 328 ft. at low water level.

In the Mont-Cenis tunnel, which is only 7·6 miles in length, and situated at an elevation where the currents of air are active and where deleterious and heavy gases can easily escape by the valleys, passengers experience discomfort when passing through in a slowly-moving train. What would be their condition if a train were delayed in this long tube? It is only reasonable to suppose that the discomfort would be vastly greater in the Channel tunnel, and this would be particularly unfortunate, for, in trying to avoid sea-sickness on the

surface, passengers would be exposed to a far greater evil below.

Finally, a still more formidable consideration is to be found in the fact that at no place is the earth free from seismic movements. If any such were to occur in the neighbourhood of the Channel, the lining of the tunnel would be fissured, whatever its construction, and the tunnel would immediately become impracticable, for the water, rushing into the fissures with irresistible force under a pressure of ten atmospheres, would speedily flood the work. One shudders at the thought that the least tremor of the earth's crust would certainly lead to such a result."

M. Arnodin finds the idea of a causeway quite practicable save on the ground of the enormous cost, but to shut up the Channel navigation is obviously something not to be thought of. But he supports the idea of a high-level bridge, at an estimated cost of 34½ millions. We do not deny that the bridge might be practicable, but it is a serious question whether it is worth the cost, besides the objection before urged in these pages, of creating in a frequented sea like the Channel, very subject to heavy gales, what would be practically a series of reefs to add to the dangers of navigation. Improvement in steamship speed and accommodation is much more to the purpose than any of these extravagant schemes for connecting England with the main land. Other articles are on "The Control of the Nile," by Major Sir Hanbury Brown, late Inspector-General of Irrigation in Lower Egypt; "Lightning Protection," a short article by Mr. Killingworth Hedges; and an article by Mr. F. F. Bennett, on a proposal for draining the English canals and converting them into electric railways. No doubt this is quite possible, and the idea seems rather fascinating, but it must be remembered that the great advantage of water carriage, where time is not of consequence, is its cheapness, and this economical element would of course be obliterated. We prefer to think that there is a great use for the English canal system as it is, if it were properly worked and the most made of it.

The *Antiquary* appears with a somewhat altered cover and in a somewhat enlarged form. The number includes an article on the curious sculptured font at Lapley Church, in Staffordshire; an octagonal bowl sculptured on seven of the eight sides with New Testament subjects, and noteworthy especially for the style of the sculpture, in which the figures are nearly flat and are produced by sinkings between them, leaving the relief surface of the figures as part of the original plane. Mr. C. Lynam, the writer of the article, confesses to be unable to assign a date to the font. The church dates from the early part of the XIIth century, but there is no reason, of course why the font may not be older than the church, as is often the case. From the style of the carvings, of which illustrations are given, our impression would be that they belong to a very early period of mediæval art.

Under the title "Cyrenaica," Mr. D. G. Hogarth contributes to the *Monthly Review* a most picturesque article on Cyrene and some of its antiquities (of which there are some interesting photographs appended); an article worth reading both from the archæological and the literary point of view. According to Mr. Hogarth, only the outer skin of Cyrene has been scratched by the archæologist so far, and his photographs give promise of further spoil. Mr. E. Hutton writes a reflective article on Umbrian Art, which is pleasant reading, though, like "Paradise Lost," it proves nothing.

The *Nineteenth Century* contains an article by Mr. F. Wedmore on Fantin and Boudin, names which it is odd to see coupled, for in England we know much of Fantin—or Fantin-Latour, as he is more generally known in catalogues, but little of Boudin. The former was for many years, in England, supposed to be only or mainly a flower-painter; Mr. Wedmore still maintains that his flower-paintings were his finest work. They are very fine, though perhaps a little too solid in style to indicate rightly the fragility of flowers; but we do not consider that their interest is as great as that of his paintings and lithographs of figure subjects. There was one small oil-painting in a recent Salon, "Le Reveil," which was one of the most perfect pieces of art we have ever seen; and we place such work a long way above the best flower-painting. In his flower-paintings, however, there was a kind of inspiration of colour which placed them in quite a different category from such "flower-pieces" as we see, for instance, at the Society of Watercolours' exhibitions—the birds'-nest and the primroses, and all that. He was a great artist, greater than has been recognised as yet, in this country at least; and we hardly think that Boudin has any right to be ranked with him.

In *Scribner*, under "The Field of Art," Mr. F. Fowler writes an article on "Art-Criticism from the stand-point of the painter." He wants to know how art-criticism is to be of service to the painter. We doubt if it ever is. Painters as a rule do not care about the opinions of amateurs, because amateurs can generally tell them nothing new about technique, and that is what a painter wants, as indeed Mr. Fowler seems practically to admit. The real use of art-criticism is to the general body of the public who are interested in art; in pointing out beauties that may not be generally appreciated, and warning them against being taken in by false lights. It may be doubted whether painters care anything about art-criticism, except so far as this, that they do not like to be ignored. We doubt whether any artist has altered his style or his aims in consequence of criticism; we do not say there have not been those who would have been wise to have done so. But could they have done it if they had tried? Individual style in art is the way an artist naturally expresses himself; and he cannot go out of his own nature.

The *Century* contains one of Mr. Cole's engravings from Old Masters—a Holy Family, by Murillo, showing his usual fine and artistic treatment of line and surface in wood engraving. An article on "London Transformation," by Mr. Randall Blackshaw, is very well illustrated but rather ignorantly written. He mentions, for instance, that the London County Council, to ensure an adequate architectural effect for the buildings to occupy the newly created sites in the Strand, invited eight architects of standing to submit elevations, and called in Mr. Norman Shaw "to pass upon them" (an expression which seems to reveal the nationality of the writer); but he does not seem to be aware that the whole thing was a fiasco, and came to no result whatever. We should take it that the writer is an American visitor to London.

The *Pall Mall Magazine* contains an article by Mr. John Burns on "London—old and new," accompanied by some capital sketches by Mr. Hedley Fitton. Mr. Burns, like the man in the *Century*, mentions the competition of eight architects for the new streets, without mentioning that the competition was a failure. Perhaps, as a member of the London County Council, he could not be expected to confess this. Generally speaking, we like the tone and tendency of his article, which is quite in the right direction.

In the *Cornhill*, under the title "Weighing a World," Mr. W. A. Shenstone, F.R.S., gives a very good summary, in a form intelligible to the general reader, of the means of investigation and calculation which have been employed, for two centuries past, to ascertain the weight or mass of the planet we inhabit. Some of the information may be new even to readers who take some general interest in scientific investigations. It is interesting to find, as an evidence of Newton's scientific insight, that his estimate, on rather rough data and without the refinements of the measuring instruments available in the present day, was very near to the result which the most exact modern investigation has arrived at, viz., that the mass of the earth is about 5½ times that of an equal sized globe of water.

Knowledge contains a useful article on the process of electrotyping, especially as applied to the production of medals; and Mr. W. J. S. Lockyer commences a series of articles on "Our Sun and Weather," being a systematic attempt to trace out a connexion between the state of the sun's surface and the state of the weather on our planet.

To the *Gentleman's Magazine* Mr. J. Ellard Gore contributes an article on "Early Astronomical Observations," showing that in ancient times men had their eyes more open to these subjects than is sometimes realised.

INSTITUTE PREMISES, WEST HARTLEPOOL.—On the 5th inst. Sir Christopher Furness, M.P., laid the foundation-stone of the new Church Institute, which is being erected in connexion with the Grange-road Wesley Church, West Hartlepool. The new buildings will comprise separate reading and games rooms for men and women, a lecture hall to seat 250 people, and a ladies' parlour. The estimated cost is 2,000*l*. The architects are Mr. H. Barnes and Mr. C. H. Burton, and the contractor Mr. John Proud.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A MEETING of the Royal Institute of British Architects was held on Monday at No. 9, Conduit-street, Regent-street, W., Mr. J. Belcher (President) in the chair.

Elections.

The following gentlemen were elected as Fellows of the Institute:—Messrs. C. H. Brodie (London), Geo. A. Humphreys (Llandudno), Wm. Thos. Lockwood (Chester), A. E. Powles (Northwich), and E. R. Eckett Sutton (Nottingham).

Deceased Members.

The decease of the following members was announced:—Messrs. A. E. Perkins (F), J. T. Wimperis (F), and A. C. Wissenden (A).

Building By-laws, Specially in Rural Districts.

The Chairman announced that the discussion on the papers read by Messrs. Lacy W. Ridge and J. S. Gibson would be resumed, and said it would be better to take the discussion first on the paper by Mr. Ridge, which dealt with building by-laws, specially in rural districts.

Mr. Lacy W. Ridge said he thought they were all pretty well agreed that something must be done with regard to these by-laws, which were exceedingly inconvenient to those who had to build in the country. The thing was to find a remedy, and the remedy he suggested in his paper was that the Local Government Board should get statutory powers from Parliament in order that they might reform the existing by-laws which at present they could not interfere with, and that the Board should itself bring out by-laws for which they would be responsible and which could be enforced by local bodies. It was impossible for that Institute, or any other body, to influence the hundreds of local councillors throughout the country, many of whom were extremely obscure persons even in their own area. They were persons they could not get at and reason with, but they could reason with the Local Government Board as the central body in London, and therefore he proposed—"That in the opinion of this meeting it is necessary that the Local Government Board should obtain Parliamentary powers to enable it to reform the by-laws in force in rural districts and in the smaller towns with a view to the enactment of such by-laws, and such by-laws only, as are really required by the public interest." Things had reached such a stage that something must be done.

Mr. E. T. Hall, in seconding the resolution, said he had suggested the substitution of "advisable" for "necessary" for he thought they could not dictate to a Government Department, but it was an alteration which did not affect the spirit of the resolution in the least degree. They were all very interested in listening to Mr. Ridge's paper at the last meeting, and he believed they were all in sympathy with the suggestions then made by Mr. Ridge. At present, as Mr. Ridge had truly put it, the rural by-laws were often such as were suitable for urban districts only, and there was no question that they retarded the building of cottages, which was a big political question, because it was concerned with the retention of the rural population on the land. If they could not house the rural population how could the people possibly stop on the land, and how could they possibly do this if landlords were required to erect houses which to return three or four per cent. would necessitate a rent of 30*l*. a year when the rural inhabitants could only afford to pay 10*l*. a year. Therefore, he believed the Government ought to, and would, listen with respect to views sent in from that Institute when it had for its object the erection of cottages to house rural labourers. Broadly, that was a principle with which he thought the Legislature must sympathise. All of them there were very desirous that buildings should be sound and good, and if they could afford it they would say "of the best"; but if people could not afford to live in palaces they must live in huts, and must have that which would afford a cover from wind and storm. Mr. Ridge suggested that the Local Government Board at present had no power to rescind an approval already given, and he was afraid that was so, but if they saw their way to adopt the resolution which was now moved it would enable them to recast the whole scheme and look at it from a broader point of view. With regard to the detailed suggestions which Mr. Ridge had made, there were one or two things which struck him, and which he felt would need a little

amplification or variation. For example, they did not want to deal with the local authority as if it were a hostile authority, and although they did not want to put their clients to the expense of supplying elaborate plans, yet they might meet the reasonable views of the local authority. While they should not supply drawings of the building, it would be perfectly reasonable that they should always submit with the application block plans showing where the building was to be erected. That would not put them to a great deal of trouble, and it would give the local authority reasonable information and enable them to place the site of the building on record. He thought also that Mr. Ridge had made a slight mistake with regard to factories and assembly-halls in rural districts. A factory must always be amenable to the special laws which dealt with those buildings. It was perfectly conceivable that in a village which was otherwise absolutely rural a large factory might be erected where 1,200 or 1,400 or 2,000 people might be employed. It was the practice of many trades now to go out into rural places to erect factories. He did not think, therefore, they ought to deal with the local authority in respect to factories and assembly-halls as they should deal with them in respect to cottages for the working classes. They came under a different category, and a factory should be subject to all those laws which were necessary for the protection of the operatives. The same remark applied in a different way to an assembly-hall; where an assembly-hall was erected which would contain 200 or 300 people, for instance, it was perfectly right that the local authority should have jurisdiction over the exits and fire prevention appliances attached to such buildings, and therefore in those buildings he should say it would be reasonable and desirable that owners should supply a plan showing in outline the exits and the fire appliances, etc., which were to be provided. With reference to Mr. Ridge's suggestion B that no building should be built within 20 ft. of the centre of the road except porches and such erections, he (the speaker) thought the exceptions would be a mistake. It was perfectly reasonable that there should be for the public enjoyment a clear road of 40 ft., and that there should be no porches or anything else projecting in front of that building line. On the Duchy of Lancaster Estate and Epping Forest and Enfield Chase he thought no road could be made less than 40 ft. in width, and that was a precedent which they could reasonably follow, and he suggested there should be no buildings permitted in front of the line, which Mr. Ridge had himself laid down. There were other little details he need not trouble them about. There was one with reference to the damp courses. It was a matter of detail, perhaps, but Mr. Ridge said the damp courses should be of slate. The jerry-builder might interpret that to mean one course of slates, which meant that between every joint the damp would come up. Of course, this was a detail, but if they made by-laws they must remember that there were a certain class of people who would interpret the by-laws as the maximum and not as the minimum. There were other details, such as the disconnexion of pipes, which he would not have referred to except that Mr. Ridge had laid down rules. Mr. Ridge said the sink waste should discharge into the open-air before it went into the drain. He thought it better to say it should discharge over a trap-gully, or else the speculating builder would put nothing of the kind, and they would have sewer gas coming into the air. There were other things which were mere details, but when they were laying down anything like an enactment—and, after all, a by-law was in the nature of an enactment—they ought to be correct even in such small details as those. They were, however, the fringe of the subject, and the actual broad lines which Mr. Ridge had laid down were sound. They gave reasonable latitude to those who desired to do what, after all, was the aim and object of Mr. Ridge's scheme, and that was to enable cottages to be built. When that aim was secured, and when they had got those powers, he thought it was more than probable they would find that the great difficulty of housing the rural population would be overcome. Unnecessary restrictions which were at present put upon buildings for this particular class should be withdrawn, and everyone would benefit — the architect, the employer, and the rural labourer himself.

Mr. Ridge said the by-laws were not put forward as complete in themselves. He had to read them as part of a paper which he desired to keep within reasonable limits, and if he had put the by-laws forward with all the little refinements necessary it would have taken a long time to read. As regarded factories, the Factory Acts were not mixed up with those by-laws, and they would remain in force. As to projections, it was not a question that the road was to be made 40 ft., but that no one was to come nearer than 20 ft. to the centre of the road. The road might be but 15 ft., and they could hardly say that a man should not have a covered way from the road. It would only remain so long as the local authority did not think proper to make the road 40 ft. wide. He had said that the powers as to dangerous buildings should be made to apply to new buildings and that would justify the inquiry which Mr. Hall suggested with regard to the exits of public buildings of any size. The local authority might fairly say, "You are putting up a building which is dangerous, and we should like to see plans." It was the demand for deposited plans which was so objectionable.

Mr. G. Bertram Bulmer (Leeds) said that this was a subject in which he felt deeply interested, and he would point out another view of the matter which would no doubt interest Mr. Ridge, Mr. Hall, and others present. He had had experience of the conditions of things where rural by-laws obtained in immediate proximity to borough by-laws. There was a class of the population whose wants and requirements had to be considered; they were the people who dwelt in the suburbs. If any alleviation of rural by-laws could be brought about it would be an advantage in enabling the borough to spread itself, because it would enable men who could just afford to build a house and no more to go just outside the borough boundary and erect a house which would meet all requirements of the rural by-laws and would not require to be controlled by the borough by-laws, because the house would be in a more isolated position. Where there was a country building standing on a considerable piece of land there was not the same danger of fire, and they could permit the erection of a building of a lighter and less expensive character than those which were necessary within borough boundaries.

Mr. S. W. Cranfield said he wished to say a word as to the undesirability of having different codes of by-laws. Mr. Hall's remarks as to factories being built in the country rather suggested that one code of by-laws would be sufficient for both rural and urban districts if they were framed and applied so as to properly differentiate between the various kinds of buildings and districts. There were many difficulties in applying one code of by-laws to a rural district and another code to an urban district. In the first place, districts were constantly changing, and it was quite conceivable that a distinctly country type of building might be desired by a landlord who resided in an urban district. He would, however, suffer by having to comply with the requirements of the district in which he lived, notwithstanding that he was building a rural cottage. He thought that one code of by-laws might be framed which would apply automatically to buildings in all districts, and that he felt was an important point. There were many defects in the by-laws, and one hardly knew where to commence and where to end. There were certain risks, such as fire, which did not as a rule vary in districts, and yet they saw in one district all sorts of requirements as to carrying party walls through the roofs; whereas no such requirements existed in other districts. It was very obvious that a fire was just as likely to break out in one suburb as in another, and in the North of England as in the South, and if it was necessary to take a party wall through the roof in one district surely it was necessary in another. His principal point, however, was that it was desirable to have one code of by-laws capable of being applied automatically to buildings of different types situated in districts where quite different conditions prevailed.

Mr. W. H. Atkin Berry hoped that in any attempt which was made to obtain a more reasonable code of by-laws they would not overlook another point, which was an important factor in the difficulties and troubles with which they had to deal, and that was the standing and qualifications of the officials who were responsible for the administration of the by-laws. He had no hesitation in coming to the conclusion that a great deal of the difficulty and trouble which they as architects experienced emanated from the arbitrary and entirely ignorant attitude of some of those officials called surveyors. They were men in many cases of no training whatever, sometimes merely promoted road foremen, and yet these men were accepted by municipal authorities as the persons to judge architects' plans and clients' interests, and practically had the whole matter under their thumb. It seemed to him most important that while they tried to get an improved and reasonable code of by-laws they should also insist on a better class of men to administer them and advise the councils.

Mr. J. Douglass Mathews said that it was curious that in urban by-laws no notice whatever was taken of the amount of land surrounding a building. Surely if in London an open space all round a house of 30 ft. was sufficient to render the building exempt from the Building Act the same thing might apply in the country, and he thought if there was a row of half-a-dozen cottages it would not be a serious matter if they were exempt. If something of the kind was attempted in the rural districts it would save a great deal of the trouble they experienced with buildings which did not conform with the by-laws, and certainly attention might be called to it. With regard to the remarks of the last speaker, he certainly felt that officials should understand that their business was to induce building and to make things as easy as possible instead of throwing every kind of obstacle in the way of those who wished to erect dwellings.

Mr. G. A. T. Middleton said they might add to the resolution as an addendum the following words: "And, if possible, produce uniform by-laws for urban and rural districts." It had been pointed out already that there were such things as contiguous urban and rural districts, and that the relaxed conditions in the rural districts would draw much of the population from the urban districts, and before long the rural districts would in effect become urban districts, and would come properly under urban district conditions. How was that to be got over unless there was one uniform set of by-laws which automatically applied in relation to air spaces about buildings?

Mr. C. H. Brodie said he might take it that they were all at one in hoping that some real practical outcome might arise from the discussion. He hardly knew, however, how it was to be brought about except on the principle of the maxim that "hard cases made good law," and that they would have such a series of hard cases as to enable them to secure the abolition of the present by-laws, inasmuch as they were arbitrary and interfered with what the best people in the kingdom were studying to attain, viz., building for a class of people who could not pay extravagant rents. One of the chief reasons which would induce him personally to urge the Local Government Board to withdraw all the present by-laws was the action of the various authorities in preventing them from commencing their building until they had passed the plans. He was not sure altogether how that power arose. Some by-laws had it expressly stated that they should not begin until the plans were passed; while other by-laws had no such provision, but still they did prevent the commencement of a building before the plans were approved. That acted very hardly in many cases, because often the local body met but once a month, and if by accident the plans were not in by a certain date they had to delay the commencement of the building for a month. A policeman did not come along the street and arrest him because he said a month hence he might commit a theft. Such a thing would be ridiculous and absurd, and it was no less absurd as regarded the erection of a building, because the authority had always the power of coming in and stopping them if the building did not comply with the by-laws. These by-laws, or want of by-laws, also worked exceedingly hard in another way, because, to his own knowledge, local authorities refused to pass their plans, although they might be in perfect accord with the by-laws, but were not in accord with the fad of some official or of certain members of that particular council. He knew a case in which an ash-pit was required to be built. Most of them very much objected to building ash-pits, but the reason for the requirement that they should build an ash-pit became evident at a later stage of the proceedings, when the local authority required

that a special way for emptying that ash-pit should be provided, and that the special means of access should be 13 ft. wide at the least, and that if the way to clear these ash-pits was more than 100 yds. long, then the passage-way should be 16 ft. wide. But this was not the end of it, because from that they proceeded to argue that the land ceased to be the individual property of each house, and that therefore they would have to go back an extra distance from the fence which was nearer to the house on the side of that 16 ft. road. This meant that the by-law which stated that a certain area had to be provided was forced up to mean that a certain area, plus the width of the 16 ft. road, had to be provided at the back of the house, and so on *ad infinitum*. The persons concerned in this particular case were desirous of going on with the building, but their solicitor advised them not to do so because he said the council would bring them before the magistrates for commencing the building before the plans were passed, and to that they would have no answer. The result of it all was that a block of nine very large shops had never been built to this day, and the rates of the particular district were suffering in consequence. It was an absolutely illegal requirement which was pressed by these people. The case was so bad that he made inquiry of an architect who had built in the town, and he told him that it took five months for him to get his plans passed by this particular authority. Cases like that placed properly before the Local Government Board would help them greatly in obtaining what they had in view.

Mr. Geo. Hubbard said there was a general impression that it was impossible to begin their building until their plans had been passed by the local authority, but he was rather doubtful whether that was so. In fact, he thought it would be found that the wording was only that the plans had to be submitted, and he did not think there was anything in the by-laws which required that the plans should be passed before the building was commenced.

A member asked if the words were not that: the plans should be deposited.

Mr. Hubbard said it might be, but he believed there was nothing about having the plans passed. Of course, if they did begin the building before the plans were passed they had to do so at their own risk, and if the building was not in accordance with the requirements of the local authority they could stop them proceeding. If, however, they came to make an unfortunate mistake, as his firm happened to make when they built a billiard-room in advance of the building line, as he described at their last meeting, the consequences were rather serious.

Mr. Bertram Bulmer said he was acquainted with a case where plans of a block of a semi-detached villas were submitted to a borough council, and they were not passed. The council declined to pass them. The architect took up the position that they complied in every particular with the by-laws, and he proceeded to build them. Those semi-detached villas were erected and were standing at the present day.

The Chairman asked if Mr. Brodie could tell them the wording of the particular by-law.

Mr. Brodie said he had not had time to study it very carefully, but so far as he could see there was no word in the by-laws which could prevent one commencing a building immediately one chose, but, as he had already said, his clients took advice upon the matter, and the solicitor they consulted advised them that if they began to build they would be summoned, and that they would have no answer to the charge. There was another peculiar thing in that same case. One drain took the drainage of four houses, and this authority required him to make that drain 9 in. He naturally thought that there had been a mistake in the typing of the letter, and he wrote and asked if that was not so. He received a reply that the drain must be 9 in., or the plan would not be passed. The whole of that was in the Borough of Kingston-upon-Thames, which they all knew was not far from the centre of the Empire. He would like the Borough Council of Kingston-upon-Thames to take his remarks seriously to heart, although he did not suppose they would. Their attitude, however, might account for the fact that Surbiton was growing at an enormous pace, whereas Kingston, judging from appearances, was doing nothing at all, and seemed to be a dying or almost a dead town.

Mr. Lacy Ridge thought they need not be alarmed about the Local Government Board, for they knew all about it. The Local Government Board were having the subject rubbed into them, for the Institute were not the only people who were working—in fact, the Institute had been rather lethargic in the matter. The only hope he saw of getting better surveyors was to get bigger districts. There was no reason why a town of 5,000 or 6,000 inhabitants should be separated from the adjoining district. Such places were not crowded, and the restrictions which were necessary in London were not needed, and it would be better if the districts were put together and all had rural by-laws. That would very largely get over the difficulty of the country changing in character, as it did, very gradually. His outline of by-laws was to a certain extent intended to meet the transition. As to commencing to build before the plans were passed, they must remember that the architect was not doing it at his own risk. The client had the annoyance and the risk of it, and was very much inclined to think that his architect was a fool if he got him into a row with the local authority.

The resolution was then put with the substitution of the word "desirable" for "necessary," and agreed to unanimously.

Architectural Design and the London Building Act.

The meeting proceeded to discuss Mr. Gibson's paper on "Architectural Design and the London Building Act."

Mr. Gibson, in replying to the Chairman, said he had nothing to add to his paper.

Mr. W. Woodward said that Mr. Gibson's paper was of really deeper interest than Mr. Ridge's, inasmuch as it affected the metropolis. Mr. Gibson had given them useful and interesting information as to the width of streets in various Continental towns, as compared with the streets in London, but he omitted to mention Portland-place, which had a width of 120 ft., and which struck everyone as being a magnificent width, but probably because of the comparative lowness of the buildings. Northumberland-avenue was 90 ft. wide, and when the first building was erected they thought the width was sufficient, but when the hotels and the clubs were built in that avenue they became cognisant of the fact that the 90 ft. appeared to reduce itself to very much less in width. As Mr. Gibson had urged, it was not so much the width of the street as the height of the buildings which fronted the street which was important. He felt that the question of percentage of area for bricks and mortar as in New York was a very important one. Those of them who were practising in London knew that their difficulties were materially increased by the particular lines laid down by the Building Act of 1894. As regarded the open space connected with buildings, Mr. Ridge had suggested that if a certain area was given for each building the position of that area could be disregarded, and he ventured to think that if there was an uninterrupted area for light, air, and ventilation such area should be considered not with regard to its exact position but as to the extent of the area and with regard to the bricks and mortar upon the land. If that was the case, many of the difficulties which the Building Act of 1894 enforced would cease. The matter was specially important, as they knew there was looming in the distance a Building Act Amendment Bill. He was sorry that Mr. Gibson's paper had not been deferred a little longer so that they might have discussed in connexion with it certain provisions of that marvellous and brilliant Bill which was to be enforced by the London County Council. Mr. Gibson had said that they had left it to the shopkeepers to determine the character of their street frontage. That was a subject they had had before them, and he listened with pleasure to the Chairman's presidential address in which he referred to it. The question of how much glass should be allocated to a particular building was an important question, and he had heard learned professors and eminent architects in the Institute say it was monstrous that they should erect a building in London which apparently stood on plate glass; that they should have large piers which apparently supported that which they did not support, and so on. He had, however, put this query to himself. Let them imagine one of the most eminent architects who was a member of the Royal Institute being consulted by one of the great drapers who said: "Will you have the goodness to erect a building; I can spend 200,000*l*., but I want you to give me as much glass as possible; I want you to carry my building safely, but I do not want any pier in the front to exceed 2 ft. 6 in.; if you do that you can be my architect, but if you will not and wish to carry on the traditions of the Institute, you will not be my architect." Let them imagine what would be the answer of this distinguished architect. He really was speaking seriously on this point, because he happened to be one of those individuals who had conformed sometimes to the requirements of the tradesman, and could only say that to the best of his ability he did provide all the pier and support he could possibly get out of his client, and when he had showed him a 2 ft. 6 in. or 2 ft. 9 in. pier he said: "Can't you do away with another 9 in.?" It was a very difficult problem, and they knew that eminent members of that Institute did manage to erect commercial buildings in London with sufficient pier to make them appear as if they were carrying something. Mr. Gibson made some reference to the use of steel work in building being recognised, and in the Amendment Bill they might devote themselves a little to that fact. In 1894 the employment of steel in London was not so prevalent as now, and they knew that the great object of architects in trying to enforce it now—he was not speaking of re-inforced concrete—was to reduce the thickness of walls. If they could employ steel and get rid of some of the thickness as scheduled in the Building Act they could with equal strength have thinner walls and would have greater space, which was an important factor in some of the commercial buildings. Mr. Gibson also raised the question of the public bodies which should be subject to the operations of Parts 6 and 7 of the Building Act, especially railway companies. Years ago, when the Act was passed, he remembered saying distinctly in the Surveyors' Institution that in his opinion no body whatever should be exempt from the operation of those particular clauses. He saw no reason whatever why railway companies should be permitted to put up such execrable buildings in total defiance of the Act with which others had to comply. He would not exempt any public body, not even the Board of Works or the London County Council. He knew that in one particular case in Drury-lane the London County Council did that which was wrong in regard to their own Act. Mr. Gibson also said that district surveyors should be practising architects. Twenty-five or thirty-five years ago that was the case, and then difficulties with architects were got over in that way, for they were assisted and helped in every way, because the surveyors who had to superintend the works under the Act before 1894 had been practising architects and knew all the difficulties and trials connected with building in London, and without any derogation from their public duties or any detriment to the public interest they were able to assist architects in getting buildings completed with thorough satisfaction and in accordance with the requirements. He hoped that the Institute would insist as far as it could, with reference to the new Bill, that the district surveyors should as far as possible be practising architects. They had to contend now with district surveyors who had had no practice whatever and they had had to deal with that narrow-mindedness and fadism which permeated almost every official in this country. He trusted that the Institute would do its best to secure that district surveyors in future should not be so much as they were at present under the thumb of Spring Gardens, but should be independent gentlemen, able to administer the Act which was before them and able to assist to the best of their ability the works which architects had to carry out.

Mr. Bernard Dicksee said that as a district surveyor he might be allowed to say a few words. Regarding the question of open space in the rear of buildings he had always felt that the Act of 1894 was totally inadequate to provide the necessary open space for the very good reason that it provided it in the wrong place. It required the open space at the rear of the building for the full width of the building. There were hundreds of buildings in his district where there was not a single window that obtained its light from that open space. He referred particularly to small buildings put up mostly for the working classes, planned with a room front and back and a rather long back addition. To provide that open space at the rear of the building (which was no use at all) they were obliged to drive the back additions of these buildings closer together, and so stive up the open space provided for

lighting the windows that it was of very little use. The Science Committee drew up what he thought were some very good suggestions as to open space, but he was afraid they went no further than the Council. These were based to a certain extent on the New York and Philadelphia provisions. It was suggested that there should be an open space equivalent to a certain fraction or area of the whole site, to be disposed in such a manner as to afford a proper means of light and air for the various windows. That would require the district surveyor to say if he did not think the space provided a sufficient amount of light and air, the matter would go before the magistrate in the ordinary way, and the surveyor would have to prove his case. There were certain other suggestions made as to the height of buildings so as to allow cross currents, but these were details. The main principle was that the open space should be elastic, not so much in size as in position. It was no use putting an open space where the windows were not; and at the present time in these small class of buildings the open space required by the statute was not used for the purpose for which it was intended. The next question was that of steel construction, and the Institute sent up a very good set of suggestions to the London County Council for their new Bill. The County Council in their wisdom or otherwise did not propose to insert these in the Bill at all, but to take to themselves power to make regulations for steel construction. These would not be by-laws but regulations. If they were by-laws they would have to be subject to the provisions of the Act, and would have to come before that Institute and half-a-dozen other bodies, and have to be approved by the Local Government Board after hearing any opposition they or others might choose to put in against them. By using the word "regulations," however, in this new Bill all that machinery was waved on one side with a high hand, and those regulations, if they were made, would be made by the London County Council off their own bat, and the architects would have to carry them as best they could. That was the point to which he thought the Institute should pay very particular attention. He was afraid they were to a certain extent to blame because they had tacked on to the end of their suggestions that it would be better to have them in the form of by-laws so that they might be altered without a fresh Act of Parliament. His view was that they should form part of the Act, even if there was power given to the London County Council to make some variations if they found it necessary. As to Mr. Woodward's attack on the district surveyor, he was sorry that in some cases there was a certain amount of truth in his complaint. His own view was that the district surveyor was not intended to obstruct building, but to assist it. The district surveyor had certain requirements to carry out, and to that extent he was tied and could not help himself, but there were different ways of carrying out the Act, and he thought that if the district surveyor could show an architect how the Act might be complied with when he was erecting his building he would be morally bound to adopt that course. As a district surveyor he wished to fully endorse Mr. Woodward's and Mr. Gibson's suggestion that the Institute should insist to the utmost of its power that the district surveyor should be a practising architect. He was in the position of having to give up his practice when he became a district surveyor, and he was bound to admit that the want of practice did not assist him in his work, and he was obliged to do all he could to keep himself abreast of the times. If the Institute did not move very considerably at the present time matters would go from bad to worse. The County Council made a mistake ten or twelve years ago in making the district surveyors sign their conditions before they accepted them as candidates. Now, after twelve years, this Bill contained provisions—and he hoped the Bill would never become an Act—which would destroy the independence of the district surveyor absolutely. The County Council proposed, in the first place, to exempt all their own buildings from the Act, and so remove any control of the district surveyor over them. They also proposed to take power to alter the title of the district surveyors to anything they thought fit, and they proposed to make provisions with regard to the payment of district surveyors, and also to take action in lieu of the district surveyor, so that they might walk right over the heads of the surveyor. In fact, the result would be that district surveyors would be at the end of the string from Spring Gardens. He hoped the Institute would do the best it could for the district surveyors in this case, and in doing that they would be doing the best for themselves and for the public. It was of the utmost importance that a district surveyor should be a man who was entirely independent of Spring Gardens, and who should be capable of carrying out his duties without fear or favour. They were not at the present moment, as Mr. Woodward said, under the thumb of Spring Gardens. They were not officers of the County Council, but if that Bill passed into law as proposedhe was afraid they would be. The proper solution was to assimilate the country laws to London laws, and not assimilate London laws to country laws. There was another point he would like to touch upon which he did not think Mr. Gibson really dealt with. It was the importance of the provisions for frontage lines in respect of architectural effect. There was nothing more deadly dull than a uniform frontage. The present Building Act dealt with the general line of buildings—it did not deal with building lines at all. It had been held that the present law only applied to the existing line of existing buildings. The decisions of Barlow *v.* Kensington Vestry of the London County Council *v.* Cross, and of Allen *v.* the London County Council, all laid down that the line mentioned in section 22 of the London Building Act must be the existing line of existing buildings. In the House of Lords, in the Kensington case, it was decided that the line did not extend beyond the last building. That had not been the practice in administration of recent years. The practice adopted largely at Spring Gardens, and also by some district surveyors, was that the line extended all along the street. He did not know how many buildings would constitute a general line of buildings, but he should imagine three. He could imagine a street in which the building owner could have started the building close up to the footway. Perhaps he elected to set the building back 20 ft. and to put bays to the windows standing out 5 ft. When he had put up three houses, was the district surveyor or County Council to come along and say: "You have set up a building line; you must continue that line right through"? If that was the case, to get his 5 ft. bays he would have to set his next three houses back, and at once there was another building line, and so it might go on right down the street, and they would have a series of receding houses all along the street. It had often occurred to him that the Institute might do some good in trying to introduce into future legislation some provisions for a building frontage distinct from the general line of buildings. He thought particularly in the case of such buildings as they had round the parks and such as existed to a large extent in the city of Bath, where they had a projecting centre and two projecting wings, the law as at present interpreted in London would be awkward. His suggestion was that where it was proposed to build a block of buildings of that description the owner should be entitled to bring to the district surveyor the block plan of what he proposed to do. Having brought that plan to the district surveyor, and deposited it with him, he should be entitled to carry out that scheme, and no arbitrary question of building line should come and cut off his corner block. Perhaps the Institute would see whether in this new Bill they could get some such provision as that inserted, for it seemed to him of the highest importance to architecture.

Mr. Edwin T. Hall said the subject which Mr. Gibson had brought before the meeting was of the very greatest interest, because they all knew of the Building Bill which the London County Council was about to submit to Parliament. He hoped that the Practice Committee would exercise the greatest vigilance in watching and studying the new Bill as soon as it was in print. Most of them had seen a synopsis, and he noticed that there were some radical changes proposed, which would be inimical to the interests of architecture in London, and would accentuate the great difficulties with which they had already to contend. He would like especially to draw attention to one radical change which was proposed in the Bill, and that was in the constitution of the Tribunal of Appeal. It was proposed, among other things, that the architectural member of that tribunal should not on any pretence be an architect practising in London. He might be a doctrinaire or literary architect if he was not in practice, and might be an architect practising in Liverpool or Glasgow, but he must not be an architect practising in London. He could not imagine a more inconvenient and troublesome provision than that would be in an Act of Parliament for this vast metropolis, which was a province equal to some ten or a dozen of the largest cities in the Kingdom. In dealing with Mr. Gibson's paper, he wished first of all to refer to the suggestions as regarded the width of streets. They must be careful in enacting the minimum width of a street not to go from the frying-pan into the fire. One of the provisions of the proposed Bill meant that instead of being allowed to build within 20 ft. of the centre of the road, they should not, without the consent of the London County Council, build within 35 ft. of the centre of any road. At present in the synopsis there was no suggestion that anybody was to be compensated. They could just imagine what that meant if a house was pulled down and had to be set back. In miles of streets in London it would simply mean confiscating the whole of the property, because in many business thoroughfares the plots were not of a greater depth than that. He thoroughly agreed with Mr. Gibson that there should be an increase in the width of streets. Even in the near suburbs of London he thought there should be a minimum for main streets and also for cross streets—those likely to become important thoroughfares from east to west or north to south, and crossing places also. Those streets should be made a minimum of 60 ft. He thought it would be greatly to the benefit of suburbs if in the laying out of new estates roads were made 50 ft. wide instead of 40 ft. That was not an unreasonable requirement, and, personally, when he had had to lay out estates near London, he had made the roads 50 ft. wide, because he thought it was wiser in the interests of the estates even although to some extent it did affect the ground rents derived from the property. Beyond that he did not think they should go. Mr. Gibson suggested that there should be 70 ft. roads, but for suburban streets he suggested that that was excessive. It meant an immense capital outlay and a large charge for maintenance; the latter had to come out of the rates. If a street was unnecessarily wide it was wasteful, for it did no good whatever. A road 50 ft. wide gave a good wind current and provided plenty of sunshine for the houses on both sides, and, therefore, they must not in their desire to improve aeration go too far. There was also the difficulty of crossing, because where they made an excessively wide street they must also make havens or they would create difficulties for the pedestrian traffic. In London itself he thought there should be power, with proper compensation to owners, to make main streets up to 100 ft. wide. Beyond that he did not think power should be given. He believed that 100 ft. was a width very amenable for traffic, and with streets of 100 ft. they would be able to make the Metropolis very fine. He believed Mr. Gibson went so far as to say that there should be a general rebuilding of the streets of London. That was a counsel of perfection, but had he realised what it would cost in money? Take Cheapside. He supposed he would be within the mark in saying that it would cost 100,000,000*l.* at least to widen Cheapside to a width of 100 ft. They must be practicable, and it was no good their making suggestions which were impracticable. Were they to lay before the ratepayers any such suggestions for re-alignment, it would involve London in a cost equal to the National Debt. Reference had been made as to the height being made to vary with the width of the frontage of the building. He did not think they need trouble their heads about that in London. If that were done it would make the streets look "higgledy-piggledy."

Mr. Gibson said that under the present Act the owner of a building was allowed to erect the front of his building to his own ideas, so that there was no continuity of design. If under the new Act a greater height than 70 ft. was allowed for the purpose of obtaining architectural uniformity in narrow frontages, there should be powers given to enable contiguous owners to collaborate on the design.

Mr. Edwin T. Hall said that any two owners

could do that now, and constantly did it. No Act of Parliament was required to enable two owners to agree. With reference to the heights of buildings, although he agreed with increasing the width of the streets, he did not think that the limit of the present Building Act was an unreasonable one for a city like London, where not only was property of great value, but the necessity of being within a given area was so important to men of business. When they came to think that New York permitted a building of 100 ft. and 150 ft. in height, why should they consider that their height in London was unreasonable? With reference to the railway companies, he thought the public ought to make a strong protest against their being exempt from the operations of the Building Act. Their railway stations, with one or two exceptions, were a disgrace to London. Let them take Victoria Station, which at the present time was being rebuilt. For years and years the owners had paid a dividend of 10 per cent., and yet the station gave foreigners a most disgraceful idea of the architecture of London on their arrival in the capital. A more miserable building they could not see. Let them compare it with some of the fine Continental stations—say, the station at Frankfort-on-the-Main, which cost 1½ millions of money to build, and had 19 parallel platforms, with an ante platform 100 ft. in width, on which he should think they could put five battalions of soldiers. In that station they found everything complete for their comfort and luxury. Why could they not impress on their railway companies the obligation that they should build respectable stations for the credit of the city? He thought it should be compulsory on them to be amenable at all events to the Building Act. As to the difficulty of the glass frontages, Mr. Woodward had put a question, and he did not think many of them would have the courage to decline the work if it was offered to them. But London was not very shocking in this respect. Some years ago he put up a block of buildings, and had built piers, but the tradesman covered the piers with glass showcases. In Frankfort there was a building with a frontage of glass from the top to the bottom. Although they might cavil and object, he did not see how they could coerce the private owner to build architecturally when he said that his first business was to do that which would bring him income, or else he would not spend his money on building. He could not imagine how the Legislature could insist upon it. With reference to the architectural treatment of streets, there again some difficulty occurred. They all liked to see their streets noble in design, but they must not forget that most of the improvement in London had been made by its individualism, and had resulted from that quality which made England so great. He trusted that the Institute would impress upon the Practise Committee the necessity of watching this new Bill. It was a Bill of the most drastic character.

Mr. Woodward said that with regard to the Tribunal of Appeal it had been brought before the Parliamentary Committee of the London County Council, and they were asked if they would withdraw that particular section, and they said "No, we intend to insist upon it."

Mr. Hudson said that at all events they had that evening settled a question which came up perennially before owners of frontages, and now any member of the Institute could feel at liberty to erect a building which was apparently supported on plateglass.

Mr. Hall: You must do your best to prevent it.

Mr. Hudson said that he quite agreed. With regard to the height of buildings they had had a good deal of adverse remarks with regard to the drastic reforms of the London County Council, but he thought they were indebted to that body in some respects, especially in the case of the new thoroughfare, where they had, to a certain extent, limited the height of the buildings. At any rate, the London County Council had prevented an American syndicate putting up what he thought would have been a horrible monstrosity. In that connexion he thought they were greatly indebted to the Council for nothing could have been more terrible than to have had Somerset House and the churches in the Strand dwarfed and crushed by such a frightful thing as they saw on entering New York harbour. Mr. Dicksee had referred to the open space, but he was afraid that was a thing it would be very difficult to alter, because in such neighbourhoods as he had spoken of, where the frontages were very narrow, a great portion of the accommodation of the houses came into the back additions, and when they put them back to back, he failed to see how they could possibly have a large space for air and light in between those back additions. Therefore, he thought they had better accept the lesser of the two evils, and be content, as a rule, to have the space at the back because they must remember it benefited the adjoining rows of houses which came upon them. He was afraid the only thing they could do was to prevent the windows of one house staring right into the windows of another. With regard to the district surveyors, he did not know that it would be possible for them to attend to their increased duties in London if they had a large practice themselves. He believed in the old times a district surveyor could not practice in his own district, but what he did was to get a brother district surveyor to father his schemes in his district, and he did the same for his brother district surveyor in an adjoining one. He felt that it would be very difficult to carry out the particular Acts, as they did them now, if the district surveyor was in private practice, but he hoped they would be able to satisfy the London County Council that that could be done.

Mr. H. H. Langston said he would like to refer to the matter of Robins *v.* Goddard. It was in the matter of the conditions of contracts.

The Chairman said he did not think that was a subject which should come into the discussion; at all events, they must allow the discussion to proceed first. The matter Mr. Langston referred to was being considered.

Mr. Brodie said he would like to break a lance in favour of the exemption of some of the great corporations from the provisions of the Building Act. He was surprised to hear Mr. Gibson, who was a thorough Scotchman, say something which was illogical. Mr. Gibson objected to these corporations being exempted, but, at the same time, in his paper he put in the strongest plea for the use of reinforced concrete. Had it not been for the exemption of these great corporations who were not under the provisions of the Building Act, reinforced concrete could never have been brought into the county of London. It was only the railway companies who had been able to provide the architect with the sight of a building constructed entirely in reinforced concrete in its proper thickness.

Mr. Dicksee said that the buildings put up by railway companies in which reinforced concrete was used could be put up by anybody else in exactly the same way. In Southwark a railway company had put up warehouses, but any architect could do the same thing by complying with the conditions of the London Building Act as to thickness of walls. It was only for railway buildings proper that the railway companies were exempt.

Mr. Brodie said that as a matter of fact railway companies could build within their own area any building they liked. They could put up a timber building if they liked, and he thought that Mr. Dicksee's correction rather failed.

Mr. Gibson said that he prefaced his paper with the remark that the whole of it was concerned with the artistic view of the Building Act—that was, he only took up that portion of the Act which they as architects with some sympathy with architectural art were chiefly concerned with. He did not concern himself with construction as construction; only so far as it had a direct bearing upon the artistic effect of the design of a building. His object in reading that paper was twofold. In the first place he wanted to point out so far as he could all those portions of the Act of 1894 which, in his view, were not conducive to the artistic development of architecture, so that in any action which that Institute might take, and he hoped it would take a very strong action, those defects might be removed in any future enactment. Coming in detail to the criticisms passed that night, Mr. Woodward brought to his notice the fine width of Portland-place and the comparatively narrow width of Northumberland-avenue. That enabled him to bring his main point before them, which was that the width of streets was relative to the height of buildings. He thought they would agree with him that, with regard to the roads in a radius of a mile and a half from St. Paul's, it was desirable that owners of property should be allowed to erect buildings of a greater height relative to the width of the street than they ought to be allowed at a greater distance from St. Paul's. He divided the town into three zones. The first had a one and a half mile radius from St. Paul's, and was three miles across, and he laid it down that within that area buildings could be erected to a greater height than the width of the street. He thought that in business areas streets 100 ft. wide were necessary. The Kingsway was 100 ft. wide, and was in itself proof that streets of 100 ft. were necessary within the commercial centre of London. If they built such streets in the commercial centre of London it was quite right and proper that buildings higher than the widths of the street should be admitted. The maximum height he advised was 125 ft. Outside that area came another radius of another 1½ miles, and within this area buildings should not be allowed under any circumstances to be higher than the width of the streets. Outside that area again, beyond the three miles' radius of St. Paul's, no buildings should be as high as the width of the streets. The result would be that you would secure more aeration as they got from the centre. Further, the difficulties of acquiring property to widen streets would be very much less, because they would not have buildings so congested as now under the present Act. At the present time it appeared to him that the chief defect of the whole Act was this—that they made one regulation which they fondly imagined would apply to all circumstances. Then as to the question of re-alignment, and what he might term the most perfect alignment, within the commercial centre of London. Whether it would cost 100,000,000*l.* or not to widen Cheapside was entirely outside the question. Whatever it cost it would have to be done. At the present moment the difficulty of dealing with public improvements was this—that there was no scheme or method. They chopped off a bit of Cheapside because as it happened a few 'buses stopped there, and they chopped off a little bit on the south side of Piccadilly, and they would go on chopping and chopping and chopping, and never have any scheme to deal with the matter as a whole. Whatever amount of money this might cost them from the point of view of capital expenditure—and all that they had heard was merely guesswork on that point—the cost to the community now was immeasurably greater, and they knew it every day of their life. Let them take a cab and go from Holborn to the Bank between nine and eleven. (A voice: 'Why not take the Tube?') He thought it was an unfortunate thing that they had been compelled for that very reason to build tubes. The cost to the community by reason of the congestion of traffic in all those main streets was, in his view, immeasurably greater than any capital cost which it would take to work out the whole re-alignment of the commercial centre of London. With respect to steel construction, he joined issue with Mr. Brodie that it was only through the exemption of railway companies that they were enabled to see something of re-inforced concrete. The question of steel construction and re-inforced concrete were questions which in the very nature of things it was necessary for the County Council to deal with. Steel construction was known and used largely, and more experience was obtained in the use of it in America long before the time of the framing and passing of the Act of 1894; but it appeared that it was absolutely necessary to have enormous fires to bring it home to the wisdom of the officials of Spring Gardens that steel construction, properly applied, was a safe and sound form of building construction. The illogical position was that of the London County Council, which made no provision for any other form of construction than that of buildings of bricks, stone, and similar materials. They provided for no advancement and no new materials which might be discovered or used. His point with regard to steel construction was a different one. His point was this—that the very adoption of steel construction altered the whole complexion of the requirements of the Act dealing with the relative areas of solids and voids. That was the whole point. What were they doing at the Ritz Hotel, in Piccadilly? They were practically putting up a steel building and covering it with granite and stone and brick, for no apparent purpose except to comply with the Building Act. It was absolutely monstrous, and no public authority ought to be permitted

to continue to enforce by-laws of that nature, which were practically obsolete. The strongest point upon which he thought the Institute should concentrate its efforts was that of retaining the services of the district surveyors, who were practising architects, and they should do everything they could to lessen red tape and mere officialism. If they did that they would go a long way towards getting better architecture, more freedom to work, and the public would in no way suffer.

The Chairman said the only point he would refer to was the overcrowding of the suburbs, which was increasing to a very alarming extent. He believed that expansion of the tramway system was causing the increase of small properties. People having houses with a few acres were going further out, and the land was promptly taken up by the speculating builder, and crowded with as small houses as he could get on the land. That was a growing evil, and something should be done. He felt as they got out the lower should be the houses, so that they could get as much air drawn towards the centre as possible. They had had a number of very valuable suggestions, and he thought they would be of great assistance to the Practising Committee in dealing with the matter at the proper time.

Mr. Douglass Mathews said the Committee was considering the Bill of the London County Council, and the suggestions made would be urged at the proper time.

The Chairman announced that the next meeting would be held on January 23, when the Council's award of prizes and studentships would be made, and a paper would be read by Mr. James Ransome on "European Architecture in India."

Fifty Years Ago.

THE PRESENT POSITION OF ARCHITECTURE.—To such a mechanical routine position is this noble art reduced. No inducement is held out for real thought and composition. The designer, if designer he can be termed, is fettered beforehand; he is actually tempted and encouraged to remain stationary, and content himself with the system of transcription which prevails. If it be true, as Forsyth says, that "deep learning is generally the grave of taste," certainly the modern architect is compelled to bury under a knowledge of the details of other styles, whatever taste for original composition and appropriate indigenous ornamentation, the germs of which he may chance to possess. His reputation must be based, not on his own excellence, but on that of others. He is not called upon to think for himself; his merit lies wholly in the ability to select with care and taste the best features from approved ancient examples; not to look into his own mind for inspiration, but to endeavour to approach as near as possible to the feelings which dictated the ancient fabrics, without considering whether the spirit which prompted their peculiarities should prevail in our own days. * * *

Instances there unquestionably are of men of ability, men who evidently think for themselves, and whose brilliant genius compels us to believe in the still present power and vitality of the art, and that it may be roused from its dormant position.

But we cannot in fairness look to the profession, whose living, whose very existence, is dependent on the favour of their clients, for a complete remedy of the evils stated. The general public have it fully in their power to "reform it altogether." They are to blame, and from them must come the impetus which is to rescue the art from its present depressed position. Let them, with more enlarged and comprehensive views, determine no longer to be contented with counterfeits and imitations. Let them institute an experimental competition, and not be discouraged by the first result, but see whether repeated efforts do not tend towards the full and perfect development of a new and superior style of art. Let them, remembering that even the reptile does not endeavour to clothe itself again in its cast-off skin, resolve to reject all designs evidently and professedly copied from antique and other exemplars. Let them no longer encourage the erection of structures which shall be but as the shadows of past ages, aping ancient institutions, and serving only to remind us of this or of that nation's palmy greatness. Let them demand an indigenous style, which shall rise at once out of the peculiar circumstances of modern days. Let them demand edifices which shall *appear* the works of Britons of the nineteenth century, and not the compositions of Egyptians, of Greeks, of Middle Age architects, and of Moors, oftentimes in the last stage of their dotage. Let them do this, and they may confidently trust that architects will nobly respond to the call, will prove themselves equal to the crisis, and demonstrate that theirs is not the art which is fated for ever to stand still.—The *Builder*, January 13, 1855.

Illustrations.

CHURCH OF NEUFCHÂTEL-EN-BRAY.

THESE drawings, made by Mr. J. Tavernor-Perry, are described in the article by him in another column.

RUSKIN HOUSE, ROCHESTER ROW.

THIS building, which is on a plot of ground running through from one street to another, is arranged for the manufacture of glazing and casements and decorative metal work, etc.

It consists of front and back blocks with a narrower intermediate block. The smiths' shop is in the basement, the offices and showroom are on the ground floor, and the upper floors are workshops. The front is treated in oak, rough-cast, and Kentish hand-made tiles, with Dutch tiles on the face of the ground floor bays.

The builder was Mr. A. J. Bateman, of Ramsey, Hunts, and the architect Mr. Arthur Keen.

BROMLEY MUNICIPAL BUILDINGS COMPETITION:

FIRST PREMIATED DESIGN.

WE give this week the elevation and two plans, to a pretty large scale, of the design by Mr. R. F. Atkinson, of London, to which was awarded the first premium in the competition for New Municipal Buildings at Bromley.

The following quotations from the author's Report, sent in with the design, explain his intentions in it:—

"In designing these buildings I have adopted the 'Free Georgian Style,' of a simple yet dignified character, in keeping with the quaint surroundings of Bromley.

"The municipal portion is planned on the Tweedy-road front, while the courts are placed in the rear opposite the proposed police-station, so that easy underground communication can be made for prisoners in the future.

"The borough accountant's department is placed directly opposite the principal entrance, that the public may have easy access thereto: the strong room for this department is placed on this floor opening off the general office, being more convenient than in the basement.

"The sanitary inspector's department is placed on the extreme left, having a separate entrance; a small room is provided for disinfectants on this floor, the principal store-room being placed in the basement.

"The borough engineer's department is placed to the right, with separate entrance for the building inspector; the rooms not required on this floor being placed in the basement, easily accessible from the department.

"The education department is placed in the right wing, the committee-room with waiting-room for parents adjoining being so arranged as to serve as a small court, with ante-room for magistrates when required; ample staff toilet accommodation is provided on this floor.

"The county buildings are arranged with central entrance and large *salle d'attente*, off which are arranged the witnesses'-rooms, with toilets, solicitor's robing-room, and the courts, with a connexion to corridor of municipal buildings. A separate entrance is provided for the magistrates, giving access to their private corridor, off which are arranged the justice's-room, justice's clerk's room, registrar's-room, with lavatory accommodation for justices and officials.

"The county and magistrate's court is placed at one end of the *salle d'attente*, with entrance therefrom for those in attendance, entrance for justices from private corridor, and entrance direct from outside for the public to gallery; a separate entrance is arranged for prisoners down to prisoners'-room in basement, with stairs to dock, and provision for subway to future police-station.

"The small court is placed at the other end of the *salle d'attente*, and having entrance therefrom, also separate entrance for justices through an ante-room.

"An entrance is also provided for the public from the street; this court with ante as previously named, is so arranged as to be used for the committee-room of the education department, with waiting-room for parents when not used for court purposes.

"On the first floor is placed the council chamber, situated so as to be away from all noise of the streets. On the left are placed the two committee-rooms, with aldermen and councillor meeting and robing-room centrally placed between them, and with ample toilet accommodation. The mayor's parlour is placed on the right adjoining the town clerk's-room, which, with the other offices, are placed on this floor.

"*Materials.*—The external fronts would be faced with Lawrence or Poulton's hand-made facing bricks, six courses to the foot, with dressings of Monk's Park Bath-stone, the area facings being of Ruabon Cream facings bricks. The roofs covered with green Tilberthwaite slates. Flats formed of asphalts on concrete. All floors of steel and concrete on the Columbian system, laid with Hopton stone mosaic and wood, as required for the various positions. The windows, filled in with wood frames, iron casements, and glazed with leaded lattice with broad leads. The walls and ceilings would be in plaster of a simple character, but the hall and corridors would be treated in French or other plaster, and in some cases the dados would be of Hopton wood stone, walnut, marble, Mosaic, or tiles. Where top lights are used there would be an outer skylight, with an inner counter light, glazed with obscure glass.

"The plumbing and drainage would be of the best and most approved system, perfectly sanitary—every part well ventilated, and cut off by disconnectors from the sewer. A service of water would be provided from the company's main, and hot water supplied to all lavatories.

"*Heating, lighting, and ventilation.*—The building throughout would be heated on the low-pressure hot-water system, with ventilating radiators, all under control and worked from boilers in the basement, and by fresh air passing through these radiators, warm fresh air in winter, and cool fresh air in summer is admitted, special inlet and outlet ventilators being also provided to take off the foul air, worked by electric fans, special attention being given to the courts and council chamber.

"The whole of the building would be lighted by electricity, taking the supply from the company's main."

ENGINEERING SOCIETIES.

JUNIOR INSTITUTION OF ENGINEERS.—A large number of members of this Institution availed themselves of the opportunity for visiting, on Saturday, the 7th inst., the Albert Works of the Voelker Incandescent Mantle Company, at South-street, Wandsworth. The works were kept specially running for the benefit of the visitors, and all the processes of manufacture were seen—the winding of the ramie thread off the spools as received at the works on to reels for the weaving machines—the weaving of the thread into fabric of continuous tube formation, treatment by means of chemicals to thoroughly cleanse the fabric, cutting into lengths according to the size of mantle required, sewing on of the strengthening end piece, impregnating with thorium through small roller machines, drying, seasoning, collodionising, trimming, and boxing. The works give employment to about 400 hands, and the total output is 30,000 mantles per day.

METROPOLITAN ASYLUMS BOARD.

THE Managers of the Metropolitan Asylum District resumed their sittings on Saturday last week at the offices on the Victoria Embankment.

Among the correspondence received from the Local Government Board were letters authorising the following works:—Internal painting work at Joyce Green Hospital without first advertising for tenders (estimated expenditure, 7,000*l.*); additional work in connexion with the construction of a new pontoon at Long Reach (estimated expenditure, 694*l.*); and an extension of the existing accommodation for coal and coke at the North-Western Hospital (estimated expenditure, 105*l.*). The Local Government Board also wrote sanctioning the plan of the additional means of access to the subways at the Brook Hospital, the cost of which is estimated to be 375*l.*; approving the proposal to enter into a contract with Messrs. J. & E. Hall for the installation of a refrigerating apparatus for the cold storage of anti-toxic serum, at the sum of 400*l.*, without first advertising for tenders; and forwarding copies of an order authorising the erection of additional buildings at Tooting Bec Asylum, at a cost of 36,250*l.*, and the borrowing of that amount.

Cleaning and Painting Works.—It was agreed to apply to the Local Government Board to suspend for six months the operation of article 17 of the Poor Law Board's Order, dated June 18, 1867, and of the Local Government Board's Order, dated November 18, 1884, amending the same so as to enable the Managers to accept tenders for painters' materials which may be required in connexion with the annual cleaning and painting works to be carried out by direct labour without in the first instance advertising for sealed tenders.

Park Hospital.—It was reported that the actual cost on completion of this hospital had been 251,711*l.* 10s. 10d. The architect was Mr. Edwin T. Hall, the contractors Messrs. Leslie & Co., Ltd., and the clerk of works Mr. A. Turner.

CLOTH FAIR, WEST SMITHFIELD.—The old house, constructed of wood and plaster, which fell into ruin in the night of December 28, was locally known as "The Cottage." It was No. 1, Back-court, Cloth Fair, consisting of three rooms, at the north side of the church of St. Bartholomew the Great, and to all appearances formed one of the most ancient of the old houses which still remain in that quarter.

THE ARCHITECTURAL ASSOCIATION.

An ordinary general meeting of this Association was held on Friday evening last week in the new premises at Tufton-street, Westminster, S.W., Mr. E. Guy Dawber, President, in the chair.

The minutes of the last meeting having been read and confirmed, and some nominations read, the President announced that the following members had re-joined, *i.e.*, Messrs. H. C. Chevalier and F. C. Moscrop-Young.

The Building Fund.

The President also announced the following further donations to the Building Fund :—

	£	s.
John Bolding & Sons, Ltd.	10	10
W. Flockhart	10	10
W. H. Brierley ..	5	5
Thos. Faldo & Co., Ltd.	5	5
J. Simpson & Son ..	5	5
Sir C. A. Nicholson, Bart.	5	0
A. Maryon Watson	3	3
T. C. Yates	3	3
F. Lishman	3	0
Percivall Currey ..	2	2
G. B. Bulmer ..	2	2
Henry Martin ..	2	2
Mussellwhite & Sapp	2	2
Reade, Reilly, & Jackson	2	2
Joseph Swarbrick ..	2	2
R. Douglas Wells ..	2	2
Woolfall & Eccles ..	2	2
E. A. Agutter ..	1	1
H. O. Cresswell ..	1	1
H. G. Gamble ..	1	1
Ham Hill & Doulting Stone Co., Ltd. ..	1	1
Nathaniel Hitch ..	1	1
A. P. Lambert ..	1	1
E. Godfrey Page ..	1	1
F. J. Osborne Smith	1	1
B. D. Tracy	1	1
H. Hughes	1	0

On the motion of Mr. Louis Ambler, Hon. Secretary, the following votes of thanks were heartily agreed to, *i.e.*, to Mr. Alan Potter for kind donation of a set of "Italian Photographs"; to Mr. W. G. B. Lewis for donation of a copy of the London Post-Office Directory for 1905 and to Marmor, Ltd., for donations of samples of "Pentelikon marble."

He also announced the following donations to the Library, *i.e.*, a pamphlet on "Public Health and Architecture," by Dr. Sykes, presented by the author; "Architects' Law Reports," Vol. 1, by Mr. Arthur Crow, presented by the author. A vote of thanks to the donors was accorded.

Public Libraries.

Mr. Alfred Cox then read the following paper on "Public Libraries":—

'The building and arrangements of public libraries, which is the subject of my paper to-night, is a very interesting one, embracing as it does all sorts and conditions of buildings, from the medium-sized, ordinary free public library to the magnificent buildings of our own country, and those of France, America, and Germany, in which are housed the libraries of more national character—such as that within the British Museum, the National Library of Ireland, the National Library, Paris, together with the well-known examples in Boston, New York, and Washington.

In speaking on this subject to-night, I do not propose to deal with the history of libraries prior to the passing of the Act, nor shall I discuss the general advantages of education which the passing of that Act brought about. This is all very interesting in its way, but I think, as far as we are concerned, our interest is principally in the buildings themselves. And in dealing with these buildings I shall confine my attention more chiefly to the smaller class of library building, generally adopted by the various towns in this country, and which would probably be erected for sums varying from 2,000*l.* to 10,000*l.*

As you are aware, there have been several useful books written on libraries, and papers have been read from time to time both here and at the Royal Institute of British Architects on this subject, so that I do not know that I can add very much to the excellent information contained in them, but I shall endeavour to point out the uses to which the various rooms can be put, and their suitable position within the building in relation to one another. During the last few years there has been a great deal of architectural work brought about by the erection of public libraries of this type, and many towns that otherwise could not do so have been enabled to add to their public buildings in this way, owing to the generosity of certain individuals, among whom may be mentioned more particularly Mr. Andrew Carnegie, Mr. Passmore Edwards, and the late Mr. Henry Tate, all of whom have given large sums of money for the purpose. The plans of these buildings, many of which have been published in our professional papers, show various ways of dealing with the peculiarities of site, and the official requirements necessary, at the same time having due regard to the sum of money to be expended. In the first place, it is of the greatest importance that a suitable site should be provided for; on this almost entirely depends the satisfactory planning and general economical arrangements of the building to be erected on it. It should, of course, have good light around it, and also be in as central and yet as quiet a position as it is possible to obtain. It should be large enough to allow of any probable future extension of the building to a reasonable degree; but in the case of suburban towns, which spring up like mushrooms, and develop at a rate far beyond the most careful calculations, the best solution of this problem will possibly be by means of small branch libraries erected in suitable positions. With regard to the general arrangements of the plan, these should, of course, like any other building aiming at satisfactory results, be very simple, and, if possible, all the public rooms arranged on one floor. This, however, often cannot be done, owing to the limitations of the site, and in such cases the more public rooms to which most easy and ready access is required, such as the news room and the lending department, should be placed on the ground floor, and the less-frequented rooms, and those for special study, together with the librarian's office, on the upper floors. Supervision is of the first importance, and in planning should be always borne in mind, and it is usual to arrange for this by placing the staff-counter or enclosure connected with the lending department in such a position that the attendants, who are generally at work there the whole day long, can command the main entrance, and as many of the rooms as possible. In connexion with this it is a mistake to conclude that the librarian is the policeman of the building, his work being of far greater importance than that, although probably in very small libraries he may have to do all the work, with possibly the assistance of a youth. He should be in a position near to his assistants, but it is not necessary to place his room in a prominent position as regards the public. All the public rooms should be lofty and well-lighted; the ventilation should be especially considered, so that the air can be changed frequently, as at certain times in the day these rooms are often crowded, and any feeling approaching to stuffiness is most unpleasant, besides being unhealthy for the readers, and renders the work of the attendants who are there always doubly trying.

A free public library, as a rule, has to be completed for a sum that allows little for architectural splendour, but the requirements, being generally very simple, lend themselves admirably to a successful and dignified treatment, provided the designer confines his attention to such vital matters as good porportion and simplicity, with suitable details of whatever style he may adopt, to emphasise them, and not be carried away by any unnecessary feeling that the building wants breaking up somehow. This breaking-up, as a rule, is quite superfluous to the real requirements of the plan, embracing very often as it does bay windows and odd corners, neither of which are happy features in the public rooms of a free library, and is but too often the amazing conceit of the pencil as opposed to the common sense of the indiarubber.

After all, the public library is, or should be, a local centre of culture, and, apart from the books, the building itself should be of such a character as to elevate the minds and educate the public in the art of architecture, and make them feel that they are in a place which inclines them to improve their minds and morals in every way. I am afraid library committees often overlook this, and disregard the real and good in architecture in favour of the more showy on paper, which often masks an ill-arranged plan; the former being looked upon as a sort of joke, and likened to a stable, a workhouse, or any other building which they do not associate with architecture, but think merely bricks and mortar; whilst the latter, exhibiting all the tricks of draughtsmanship to illustrate the commonplace, is loudly appraised.

I will now give you a more detailed description of the internal arrangements of a library, but I think these are pretty generally known; however, the memory cannot be refreshed too often, and possibly if most of it is forgotten some of it will remain and prove useful in the future. The entrance should be spacious, and open into a good-sized hall or broad corridor, and these lend themselves to be particularly studied as the architectural features of the building. First appearances go a long way, and I should always endeavour to make the entrance attractive. From this hall as many of the rooms as possible should be directly approached; the more-frequented rooms, as I mentioned before—such as the news and lending rooms—being, if possible, nearer the entrance. The counter or enclosure of the lending library should be conspicuous on entering, and, to my way of thinking, is better entirely open than having to pass through swing-doors to reach it. The reference room, being used by students and readers of more serious books, would necessarily be placed in the quietest part of the building, and in such a position where it would be unnecessary to be passed by people going into the other rooms. I suggest as a good place for it is within the lending library counter, so that readers—as a rule there are not many—could pass into it through a wicket gate, which would be under the control of the attendants. The books, too, in this room, being of more value, are thus afforded better protection, and the attendants know who the people are they pass into the rooms. In the case of a small library, a space for a table to be used by reference readers might possibly be arranged in the lending library itself by arranging the book-cases in a suitable manner, and I think in many cases this would give all that is required. In some buildings a separate room is given for juvenile readers, and great care must be exercised in planning so as to put this in a position near the attendants, and also where the occupants cannot make themselves a nuisance to the other readers. A separate entrance from the street is sometimes provided for this room, but I do not think it is a good arrangement, as, among other things, it makes an easy escape for the mischievous youngster after "cheeking" the attendants, and has many other objections.

One main public entrance for all parts is the simplest, and gives better control than where there are more. In a library building of ordinary size I don't see why the principal entrance should not open into a large space, which could be subdivided by arches or columns with balustrades, so as to group the various readers into the usual sections—viz., magazines, news, lending, etc. Surely one person reading a newspaper and another a magazine can do so without having a solid wall or even a glazed partition between them. This arrangement would give excellent control, and there would be no annoyances caused by such small matters as the opening and shutting of doors. Of course, great care would be necessary to exclude draughts, and I can see no difficulty in this any more than in a building of a larger area. The librarian's room is well placed on the counter or enclosure side of the lending library. It need not have any direct communication with any of the public rooms; in fact, it is an office, pure and simple, where the occupant has much work to do without being continually worried in the control of the public using the library. This room is often used for the meeting of the library committee. With regard to the lavatory and water-closet accommodation for the public, this is sometimes provided, but in a small library I think it has many objections, and is liable to be a great nuisance. Of course, it is necessary to provide for the staff, and in many cases for both sexes, as female assistants are now very commonly employed. A good store-room and work-room, and a mess-room for the staff should also be provided within easy access of the lending library, and a separate entrance for delivery might be arranged in connexion with these rooms.

The lending library should be arranged so as to be worked either by the indicator system or by a more recent method known as the "open access." In the former case there must be a long counter for the indicators, with issue spaces between them. The amount of space occupied by the indicators varies from 35 in. to 10 in. for each 1,000 numbers, according to the particular type adopted. The counter should be somewhere about 32 in. high, so as to allow children and people of small stature to clearly see the top numbers of the indicators. The length of counter would be determined by the number of indicators in use, and a sufficient allowance should be made for possible extensions. As regards the issue desks, two, each at least 3 ft. wide, should be allowed to every 10,000 volumes. Good light on both sides is very necessary, so that the public on the one side and the attendants on the other have no difficulty in reading the numbers.

In the case of the "open access" system there must be an enclosure of ample size at the entrance to the lending library. In this an attendant would receive a book from the

person returning it, and would then allow him to pass through a "turnstile" or wicket-gate into the room itself—gangways only wide enough for single file of people—where he could choose his own volume from the shelves, and pass out through a similar gate or turnstile in the other side of the enclosure. The bookcases should be arranged "end on" to the counter or enclosure, and in close proximity to them, as an extra yard when multiplied by several visits a day considerably adds to the work of an attendant.

It is a question whether it is not more satisfactory to keep the books out of sight in a "stack room" (to borrow an American name) rather than have them within the view of the public. I always think there is a very untidy look about the cases themselves (particularly the iron ones) which does not add at all to the general appearance, and if only the space occupied by the public, together with the issue counter and the enclosure, were seen it might be made a good feature and treated architecturally as a central hall, or in any other way that might suggest itself. It is a mistake to be too economical with the size of the hall, and as long as it has no odd corners in it or obstructions a good area might well be allowed, and if it could be managed so as to do without corridors it would be all the better and much easier to supervise. It is also a point to be remembered that many of the readers in the news-room are people in want of a situation, who go there solely for the purpose of consulting the advertisement columns of the daily press, and it saves a lot of traffic in the library if the entrance loby is made large enough to accommodate on the side walls notice-boards for the display of the advertisement sheets. But, of course, this means that the vestibule or lobby must be made fairly wide, so that easy access to the library itself is not interfered with.

The stack-room might be made high enough to take two or more tiers of bookcases over the lower ones, by having a light floor of perforated iron gratings between them. These floors would be reached by a straight staircase of about 3·6 minimum width. A circular staircase is not desirable, the small ones particularly being most awkward to either go up or come down. A book lift in a well-considered position is, of course, essential, where there is more than one tier.

With regard to the bookcases themselves, these are about 16 in. wide for a double one (that is for books on both sides), and the height is anything between 7 ft. and 8 ft.; often a step is provided so that short people can more easily reach the upper shelf. These double cases are better without a central partition between the books, as it allows of a freer current of air, and does away with corners were dust might accumulate, and also facilitates the washing and dusting of the shelves. A small fillet, however, might be nailed along the centre of the shelves to prevent the books from actually touching. Wooden shelves are generally $\frac{7}{8}$ in. thick, and should not be longer than 3 ft., as anything above that is awkward to use and has a tendency to sag. Wooden shelves have a better appearance than iron; they are cheaper, and if the corners are rounded do not tend to damage the bindings of the books so much. Iron shelves are, of course, more fire-resisting, but unless the whole building is made absolutely fireproof there is no real advantage in it. The bookcases should not be at a less distance apart than 3 ft., otherwise it is difficult to stand far enough back to see the upper shelves, and at the same time to allow people to pass. In the case of the "open access," a greater distance still should be allowed, and 4 ft. taken as a minimum. All counter tops or slopes should be of polished hard wood. Of course, I know many of us do not like the appearance of this, but it is a case where experience tells us that common-sense is better than "high-fallutin" ideas, however much we may sigh for wood left in its natural state to become interesting by use and time. Floors must be rendered as noiseless as possible, and wood blocks or cork carpet are generally used. Care must be taken in the latter case to have the floor thoroughly dry and well-ventilated from underneath, otherwise dry rot will occur. The walls should have glazed brick or tile dadoes in the public rooms and lobbies, as without them they are apt to get very much knocked about.

As regards artificial lighting, gas is bad, as it causes the bindings on the books to rot, and electric light, where obtainable, is very much better, both for health and cleanliness. In many libraries a residence for the librarian is arranged, and suitable accommodation for it is two sitting-rooms, kitchen, scullery, pantry, with three or four bedrooms, bath-room, etc. In other cases the caretaker only will live on the premises, and in his case the provision of a kitchen with scullery, and pantry, a living-room, and two bedrooms and a bath-room, should be sufficient. With regard to the style of the rooms themselves, the larger ones should be treated as small halls rather than rooms, and the satisfactory lighting of them must be carefully considered. Good lofty rooms with windows high up, and, where possible, opposite to each other for cross ventilation, is a good arrangement; the height of sills from the floor line being about 5 ft. up in the news-room and lending library, so as to allow newspaper slopes and bookcases to run continuously round the walls. In the other rooms the ordinary sill height is preferable; personally, I do not like the appearance of either skylights or lantern lights—they tend to make a room anything but cheerful, and the idea of not being able to see out at all is objectionable. Of course, in certain cases it is difficult to do without them, but if possible always try hard to avoid them; at all events, for your main lighting. They are also unsightly things on the outside, and rather make a building look like a hotel billiard-room or swimming bath. In a small library rectangular rooms would be the best and most economical for furnishing. Bay windows and odd corners are wasteful, and not easy of supervision. Unless there is anything against it, clear glass is preferable for the windows, and if any coloured glass be used, let it be done sparingly, and be of the best quality. It is always pleasant to look up and out now and then, and anything in the nature of opaque glass is objectionable where there is no reason for its use.

With regard to the exterior appearance of a public library, great simplicity is, as a rule, absolutely necessary, on account of cost, and is more dignified than the multiplication of much detail. The commonplace, with its many features, most of which are to the scale, one associates with a wedding-cake; the detail being very similar, is much admired by the uninitiated, who love to see a thing with plenty of detail on it, and which looks like a mighty effort of the designer to cram in all he knows (or all he does not know) in every style of architecture.

If it were possible to do without pencils or other sharp-pointed instruments, and draw with something blunter, I think in a generation or two we might see some of that regard for mass and proportion so highly appreciated by the ancients, and about which we hear so much but see so little, and the scale of detail might also be consistent throughout. However, I am not here to discourse about the possibilities or shortcomings of modern architecture, but I should like to see our public libraries designed with more character and restraint, and when I say restraint, I don't mean that merely holes in the wall for windows and doors is the right kind of simplicity, for this is nothing but poverty of ideas in design, and is not restraint at all. The art of leaving out should not be deliberate, and can only be acquired satisfactorily by constant study and experience.

Mr. Mackim, the well-known American architect, who is responsible for the designs of some of the finest libraries in that country, when he was over here last summer, told a friend of mine that considering the splendid examples of old work here, particularly that by Inigo Jones, Sir Christopher Wren, and their contemporaries, he was surprised that it was not more cultivated by our present-day architects for public buildings. Here we have at our very doors a grand architecture, and I feel sure he is right in his remarks, but it must not be studied from the illustrations of the handful of men who are doing such work which appear from time to time in the pages of the building papers.

I have borrowed several plans from gentlemen whose names are well-known to you—as possibly are the buildings erected from them—and I should like to express my thanks to them for the loan and also for a good deal of information respecting them.'

Mr. Maurice B. Adams opened the discussion and said there appeared to be scarcely anything which anyone possessed of experience in library planning would wish to take serious exception to in Mr. Cox's paper on this subject; consequently it was not quite easy to promote an animated discussion, and, moreover, having undertaken to read a paper on rate-aided libraries during next month before the Leeds Architectural Society, he (the speaker) was precluded from saying on this occasion all that he had on his mind on the matter, otherwise by anticipating his lecture he might be thought lacking in courtesy to their *confrères* in Yorkshire. "However, I willingly respond to the invitation of the committee of the Architectural Association to attend this evening, and it gives me special pleasure to thus support the chair, and to commend the remarks which Mr. Cox has been good enough to put before us. His design for the Kingston-on-Thames Library, accepted in preference to my own in a limited competition a few years ago, makes a very admirable building, and the wisdom of the choice then made has been demonstrated by its execution. Last year, when acting as professional assessor for Wakefield Public Library, I had an enormous number of plans to deal with, many of them of distinct merit, but the result proved to be that Mr. Alfred Cox secured the honourable position of being chosen as architect for that building. These two circumstances, in which my professional relationship with our lecturer to-night happened to assume a concrete form, enable me to realise how thoroughly he has, on occasion, put his knowledge to the best advantage. I anticipated consequently that he would have incorporated in his paper this evening some decidedly precise and detailed particulars such as might lead to a more practical issue between us than that which seemingly is likely now to result. It is true, as he says, that admirable handbooks have appeared, and that other papers on libraries have been read, but we are every day going either forward or receding—there can be no standing still, the movement must be perpetual. I venture to doubt the wisdom of architects confining their interest too strictly to a mere knowledge of buildings as buildings, and the architect's range of interest cannot advisedly be restricted to the question of libraries as buildings only, without embracing also their educational scope and possibilities. It is essential in all specialised work of this kind for the architect to cultivate a more or less intimate acquaintance with the process of contemporary development in progress. The library at the present juncture is already in a transitional stage, emerging, let us hope, from comparative obscurity to the full recognition of adequate importance, long enough ago accorded to it in America. The architect ought not to be content to follow only; while faithfully interpreting the wishes and adhering to the instructions of his clients, it is his business surely to do more than that so as to assist, at least, in some degree, the promoters of such undertakings as libraries to erect up-to-date premises fully adapted and equipped in accordance with the trend which improved methods and enlarged ideas are gradually assuming. In my paper, to which reference has already been made, there is one aspect of the library question to which I have devoted perhaps by far too little space, and it may be thought by architects, therefore, to that extent an opportunity has been lost. I allude to the artistic character of library buildings. With your permission possibly I may be allowed briefly to make good, as far as I can just now, the omission referred to. Eminently as a first principle, I suppose, the somewhat trite stipulation ought to prevail as to a library (or, for that matter, any other building) being made to look just like what it really is. Not a school, or a house, a town hall and offices, or a church! The affirmation of such premises is easy enough to start with, but they are not by any means so easily put into practice satisfactorily; very often such ideals have been sadly ignored. This shortcoming is more than often due to the fact that the special characteristics are masked by too close an adherence to traditional architectural lines, instead of allowing the particular needs of the interior to determine the exterior treatment. This is, I know, a very old reason to insist on here for it is patent to everybody. Mr. Cox has impressed us with the need of making libraries beautiful and worthy of their destiny. He alluded to the effect of skylights and their likelihood to make a library resemble a public bath, or perhaps a billiard-room. In parentheses let me add that quite apart from their appearance, roof lights are, in my opinion, open to several objections

in a library, and especially if no ceiling lights are also provided. They are noisy when heavy rains are falling, and they are too subject to variations of temperature, causing down draught, as well as difficulties to keep them water-tight. Ceiling lights also get very dusty and need provision for easy cleaning. I much prefer vertical dormers and lantern lights—they aid ventilation better, and, at least, are capable of architectural treatment. Still, skylights have to be employed at times, and by preference one puts them on the rear slopes of the roof, out of sight. Where no choice is left, and they have to be located where they otherwise would be conspicuous, I fancy their presence can be masked by good tall parapets, because such sloped lights need not be near the ridge. This idea of a parapet implies a cornice, and that in turn indicates a monumental façade necessitating a more than usual breadth of handling and scale. Then, again, Mr. Cox has intimated that angles, bays, and projecting features have a tendency to break up designs needlessly and obstruct supervision, which, in a way, is perfectly true. And, further, he suggestively dilates on window contrivances. We all know that windows placed low down in libraries waste internal wall-space and encourage loafing, which constitutes one of the bug-bears of modern reading-room work. Then, added to the possibilities of fenestration arrangement, ample scope for inventive skill will be found in the management of the main entrance to our libraries. It should be spacious and dignified. Last of all, however, and dominating all these details, comes in the primary advantage belonging to the facility of supervision, always and only to be insured by making all the public rooms on one floor. Consequently the general outline of an ideal library, where the site allows of this arrangement, should be comparatively low in proportion with a spreading plan. These, then, are the prevailing conditions to be observed in façade management of library design, and they are sufficiently diverse to allow of considerable variety of treatment, but there can be no reason why these buildings should be made bald and forbiddingly severe with uncouth, bald expanses of brickwork or prison-like masonry, instead of encouraging a sense of picturesque homeliness and brightness of effect. On the other hand, all playfulness peculiar to a building adapted mainly to passing amusement or even social hospitality ought to be avoided, and it goes without saying that all stuck-on ornament and vulgarity of detail is always out of place. For style, the English Renaissance appears best adapted to present-day needs by allowing sufficient margin of diversity consequent upon the exigencies of sectional contrivance, as also the immediate arrangement of planning. This reference to the sections of these buildings directs attention to one of their essential peculiarities, owing to the relative heights of their internal dispositions, which demand the utmost care and attention where economy and compactness become determining factors for success. They exercise a controlling influence, too, on the exterior, imparting the very individuality which every architect of taste only too readily recognises. Mr. Cox has rightly drawn attention to the gain associated with an impressive, not to say stately, entrance-hall, out of which the several departments should diverge. The fault, nevertheless, which sometimes may be noticed in this respect, is that designers of libraries overlook the great importance of proportionate height required to ensure a real feeling of spaciousness, so that by this oversight halls which look roomy enough on the plans are cramped in effect by reason of an upper floor or mezzanine above, crushing their height down to perhaps 8 ft. or even less. The larger the plan the greater the depression. Instances of this could readily be mentioned. As to the architectural treatment of reading-room interiors by arcading and intercolumniation, opening up the whole series of apartments into one large undivided whole, no doubt the lecturer's suggestion possesses the merit of ambitious possibilities, but the vast majority of librarians prefer separate rooms for newspapers as distinct from magazines. The concentration of a reader's attention is much influenced by his environment, and study is best promoted by a relatively restricted space, to say nothing about draughts and the difficulties of heating, which already are sufficiently complicated and troublesome. Mr. Cox has in passing briefly mentioned the essential differences of the open access library as contrasted with the indicator system—a very crucial point of the utmost consequence. He has, by way of detail, suggested apparently in any case that the reference-room entrance might with advantage be placed behind or within the lending library counter. This plan, I think, is open to the objection that when the issue of books closes on certain evenings of the week, no one would be able to use the reference-room without exposing the stack-room to intrusion, and besides it is most desirable to keep the reference-room always open for access to directories and other reference books, usually kept in these apartments, and, of course, for reading the heavier monthlies and quarterlies. As to the further observation about permitting the reference-room readers to have a table in the lending library stack-room, and group the book-cases suitably for the purpose, it would be hardly possible to discuss that point without opening up the whole question of library administration, which, to a considerable degree, must depend on the burning problem of rate-aid *v.* State-aid, and it also touches the crying need of reference-room development. To-night we have, perhaps, wisely omitted such matters, though had I not been limited, as already mentioned, I would rather have considered the provision of the library in a broader sense than has now been possible."

Mr. H. T. Hare, in proposing a vote of thanks, said that the subject was of very great interest, as libraries were the commonest buildings now being erected in our towns. He had had a little experience in the erection of free libraries, and the conclusion he had come to was that, although a free library was an extremely simple building to deal with, it was also one of the most difficult. He was inclined to question whether, given an absolutely free site and the ordinary requirements, it was possible to get an absolutely perfect plan. He did not believe it was possible—that was, to get a plan that would meet the whole requirements in a perfectly satisfactory way. The first necessity for a free library, he supposed, was that the supervision of all parts of it occupied by the public should be easy and complete. He thought there was a tendency for a certain amount of confusion of idea as to how this supervision was to be obtained. The general idea was that the staff who were in the lending library were going to supervise the common arrangements, and the consequence was that the various rooms were more or less grouped round the lending library; but in most libraries of any size there was a porter or commissionaire, and he did the real supervision of the various rooms. The staff were generally occupied in other ways, and if it was suggested to one of the staff that part of his duty was to supervise he would generally be offended; he had other things to do, and did not like to think that supervision was part of his duty. It simplified the question of supervision very much if the news-room and the magazine-room were supervised by a porter. Mr. Cox had made a slight suggestion as to throwing all the rooms into one. There was a great deal more in that idea than Mr. Cox made of it. The real solution of the question would be to do away with the many rooms and have one great hall for all the requirements. That seemed to him to be the best arrangement for a free library. He had never been in a free library where the fittings were widely enough separated; they were crowded together, and the rooms looked cramped. Any suggestion of that kind would be obviated if they could get rid of all internal walls. As to a good entrance hall, he did not believe in it, and he did not think one was required. He liked to go into a free library directly out of the street—through two doors, if they liked, but to enter in as one did into a church. As to the lending library, he did not regard it as such a necessity that it should be on the ground floor. He supposed that nineteen people out of twenty who went to a library went to the magazine-room or news-room, and it was only on certain times of the day and certain days of the week that there was a large number going to the lending library, and it did not seem to him to be objectionable to put the lending library on the upper floor. There were a great many advantages in doing so. The reference library was, in most cases in a library of any size, put upstairs, and if the lending library was put upstairs also it was possible to get all the books together, and have them directly under the control of the same staff. There was never a large number of people in the reference library together, and there was an advantage that way, for the whole of the staff could be on the upper floor, and could attend to both libraries. The ground floor, then, could be devoted to the news-room and magazine-room, and could be supervised by the porter. The only difficulty was as to the staircase, and it was one of the most serious difficulties in the planning of a free library to arrange the staircase in a satisfactory way, though it could be done, he thought. As to the external treatment, he agreed with what Mr. Cox had said. The simpler the treatment the better, though the building ought to have the appearance of a public building and not a domestic one, for it was a public building and ought to look like one. In a great many libraries there was a house for the caretaker. That was a feature most committees liked to have, thinking they saved money that way; but, as a matter of fact, a caretaker's house generally cost half as much as the library itself, and a caretaker's house could be rented, generally, at a quarter the cost of the house that was built. He had tried to impress this upon committees, but they could not be got to see that it was a fact. Mr. Cox had given some particulars as to what he considered to be the correct arrangement of a lending library counter and the accommodation for the indicators. He (the speaker) was inclined to think that the best arrangement for the lending library counter was to put on the top of the whole length of the counter a screen with openings for the issue of books and one or two spaces for indicators, but the majority of librarians had exaggerated ideas of the number of indicators required. There was no necessity to have indicators for the whole number of books in a library. If there were indicators for 5,000 or 6,000 books in a lending library that was quite sufficient. It was ridiculous to have indicators for all the books.

Mr. S. D. Adshead, in seconding the vote of thanks, said that Mr. Cox did not appear to have touched on the question of the relative merits of the open access and the indicator systems. There was a great deal of discussion on the subject just now, and in his opinion the indicator system was the best. In theory the open access seemed the best, but in practice it led to the injury of books, to confusion, and the necessity for more supervision. People pulled down half the books before deciding what to take away. He did not think that the system was a favourite one with librarians, and it should be considered as out of the question in a district populated with the very poor class of reader. Keeping before his mind a number of well-known plans, it appeared to him we had got to a stage in planning where there were two distinct developments; first of all, there was the plan which places the news-room and magazine-room, the lending department and the reference-room all within separate walls, separately heated and lighted; then there was the plan which was, he thought, the more modern one, where the news-room, the magazine-room, the borrower's space, and the lending department were all divided off by low screens, but were all under one ceiling. He thought that this was a very good arrangement, though he did not go so far as to say that there should be no division whatever between the departments; the low screen helps to classify the arrangement. Mr. Cox seemed to advocate arranging a space within the lending department with tables for reference readers. He (the speaker) did not see what was to be gained by this. He thought that the reference-room should in all cases be a separate room in a position where there would be as little intrusion and movement as possible, both by readers and librarian. Mr. Cox said that the question of lavatory accommodation should be settled by the size of the library; but in deciding whether to have lavatories for the public or no the position of the library building in the town and the class of reader were, in his opinion, what we had to consider. We could not over-emphasise the importance of having a library simple and dignified in design, and he agreed entirely with what Mr. Cox had to say about this. The entrance hall should be dignified, and everything here should be sacrified to architectural effect. As to the architectural effect of the reading-rooms, any architecture in these rooms should be so refined in proportion and so unobtrusive that the ordinary reader would not notice any architecture whatever. Mr. Cox seemed to have a great objection to top

lighting. He (the speaker) thought that, if the difficulties of ventilation could be got over, this was by far the best means of lighting a library. Under no circumstances should an architect omit to put at least one large sash window in every department to get a good blow through if necessary. With regard to the fittings. In the news-room there was no doubt that by far the best arrangement was to have the newspaper slopes all round the room; newspaper stands seemed to block up the space and lead to all sorts of dodging about, and, where there was room, should be abolished in all cases. With regard to the fittings in the reference-room, he understood that in some libraries recently erected the books used in the reference-room were all kept in the lending department, the idea being to save space. He thought that this was a very great pity, as it robbed the reference-room of its proper character; the finest possible treatment of wall surface in a library was a surface of books. Rather than take all the books out of the reference-room he would prefer to reduce the number of books in the lending department and save space there.

Mr. S. K. Greenslade said that any remarks he had to make would be as to American libraries. In America the free access system was in vogue as against the indicator system here, and that was the great difference between the libraries in the two countries. In America the people had somehow learnt to treat books well, for they were rarely damaged or stolen, and the children—the children's room in the American library being made a great feature—went and took down their books and gave little trouble to the attendants. There was no mistaking a library in America; it was a scholarly and monumental building, and although many were somewhat small—a central entrance hall, a general reference and reading-room on the left, the children's-room on the right, and a stack-room with the delivery counter at the back—the majority were large buildings which had been provided by wealthy people, and money was not spared. It was interesting to compare the elevations of American libraries with those of English libraries now being erected, and he would advise all of them to look at the designs of American architects for the library buildings they erected. The American architect was in this respect far ahead of the English architect. As to the lending library being upstairs, in the great American libraries—in the fine one at Boston, which was really the start of the library building movement in America, the lending library is upstairs, as well as the general reading-room, and the reference-rooms are on the second floor, and in nearly all the large libraries it was so—except the two University libraries in New York, viz., those of Columbia University and the New York University, both of which have great central domed reading-rooms on the ground floor—the former octagonal and the latter circular. A similar method is adopted in the great national library at Washington. In the library at Washington one sees the first attempt at the storage of books adequately on anything like a great scale; at that library there are about 3,000,000, and there was room for more. They were all placed in great rooms which had stacks of steel frames with marble floors, and were seven or eight stories high. All the framing of these bookcases was of iron, having steel shelving with rounded edges, with parallel openings to let the dust fall to the ground, all very well designed. It would be a good thing if the Association would get a catalogue of some of these library fittings in order to see how well things were designed. Mr. Cox suggested tables amongst the books; that was often done in America. One of the most recent libraries was at Utica, and at the back of the stack-room was a space fitted with tables for the use of special students who had free access to the books; and the same thing was done in Columbia University library. Here the special subject rooms are arranged in the arms of the octagon on the first floor, and the student passes from the internal corridor through the stack to the room beyond, fitted purposely with lockers, etc., for his note books, and with all the necessary books he needs for the study of the special subject round about him. In London, from the students' point of view, we were badly provided. At Columbia University, Boston, Washington, New York, and all the great libraries, anyone could enter up to ten o'clock at night, including Sunday, and see whatever book he wanted. At South Kensington Museum Library there were only three nights a week for the student up to a quarter to ten o'clock, and he hoped the London County Council or some generous individual would provide a library of the kind that was required near the new Craft school they were building in Southampton Row. It would be very central, and could be made very practical and interesting, chiefly devoted to the crafts. It could be opened from ten to ten daily—including Sundays. In plans it should be so arranged that the books and photographs of each of the crafts could be arranged in alcoves, with cases for specimens and proper tables and desks for study and drawing. A small annual expenditure of a few hundred pounds—judiciously spent—would soon enable a collection of fine examples of work illustrating all the crafts to be got together, and the study of this, as well as the photograph of old work, should inspire the keen student. This is being done in every capital in Europe—except here. Why not London? Such an institution as that would give a man in London a chance; now there was no opportunity for a student to study in that way. He hoped it would be settled one day whether the British Museum was to be a library or a museum. At the present time it was hopelessly cramped, and where the books were stored the arrangements were most inadequate. It was not a stack, and the space was badly lighted. Would it not be well if the authorities, now that the proposed additions were being considered, tackled the whole scheme in a noble manner, and not merely look ahead for five or ten years—but fifty. Such arrangements for the storage of books as those at Washington should be followed, and the sooner it is realised the better for the collection and the nation. If a student wanted to study library planning, he should study what had been done in America and not what had been done in England.

Mr. Arnold S. Tayler supported the vote of thanks, and said that, while it was good to have brought before them such illustrations as they saw round the walls, too often they did not get all the advantage from that that they should. The lecturer saw and knew the good and bad points of a design, but he often neglected to point them out to others. As to all rooms being under one ceiling, he would rather not attempt to read in a room where people were borrowing books.

Mr. Arthur Keen said he had never built a library, and he began to fear he never should, but it occurred to him to say, in reference to side lighting or top lighting, that, in libraries where the open access system obtained, people got in each other's light very much where the bookcases were side lighted, and with top lighting the objection disappeared very much. It seemed to him that Sir John Soane's interiors were always satisfactory, and that that architect hardly ever lighted large rooms from the side, but always from the top. At the Bank of England one could see this to advantage. It was a principle which might well be adhered to in large and monumental buildings.

The President, in putting the vote of thanks, said he thought that more might be made of a large hall in these buildings. He did not think that the people who read some of the magazines and newspapers to be found in libraries needed to be shut up in separate rooms. The works of reference should be kept apart, and this was generally done. Finer and grander effects might be obtained in small libraries if the bulk of the rooms were arranged under one ceiling. As to the provision of lavatories, in many places they were unnecessary, and in many small libraries they were not wanted, and their provision led to abuse. With the vote of thanks he would include the name of Mr. Adams for his interesting remarks.

The vote of thanks having been heartily agreed to,

Mr. Cox, in reply, said that Mr. Adams's contribution to the discussion was very interesting to him, as somewhat showing the views of one who had had so much to do with the erection of public libraries. He thought that a great advance had been made in the planning of these buildings, although practically without new conditions being imposed. Considering that librarians differed so in their views as to the working and architects as to the planning, he thought it might bring about good results if a conference could be held between them. He did not think there was any hidden mystery in the planning of buildings for special purposes, and an architect who cramped himself by a multitude of regulations, which were not really of much importance, would probably produce a crooked and choked plan. Surely a good, straightforward plan on broad lines could more easily be adapted to the working requirements of the librarian. Possibly the competition system prevented fresh developments, as the conditions were generally drawn up on past experience, and a competitor would certainly think twice before he broke fresh ground on the one and only hope that the assessor might favour his views. Competitions helped to keep up a good tone on existing conditions, but possibly a more distinct advance might be made if an architect and a librarian could discuss matters with a committee before the plans were made. With regard to the relative merits of the "indicator" and the "open access" systems of administration, he thought this was more a matter for librarians to discuss. An architect's work was to arrange the building to the best advantage, whichever system was adopted. He agreed with Mr. Hare in most of his remarks and pointed out that the arrangements of the different sections in one large space rather than in separate rooms had been suggested in the paper he had just read. In this case the central hall, to which Mr. Hare took exception, would, of course, disappear altogether.

The Chairman said that the next meeting would be held on the 27th inst., when Messrs. J. B. Fulton and E. F. Reynolds would read papers on "Byzantine Architecture."

The meeting then concluded.

DIARIES, ETC.

MESSRS. HUDSON & KEARNS, 83, Southwark-street, S.E., have sent us a parcel of their excellent diaries for architects and builders. These well-known publications are admirably arranged and printed, and, in addition to information usually to be found in a diary, they contain articles and facts for the use of architects, builders, and others. These diaries must be so well known to our readers that further reference to them is unnecessary.

Messrs. Hayward Bros. & Eckstein, Ltd., of Union-street, Borough, S.E., have issued a useful scribbling diary. It is interleaved with blotting-paper.

Messrs. Ashwell & Nesbit, Ltd., warming, ventilating, etc., engineers, have issued a large size tear-off date indicator.

COMPETITIONS.

HAMMERSMITH BATHS AND WASH-HOUSES.—In a report circulated on Tuesday the Baths and Wash-houses Committee of Hammersmith Borough Council state that they have decided (subject to the usual sanction) to invite the following six architects, who have signified their willingness to enter the competition, to send in designs for the erection of public baths and wash-houses:—Mr. Maurice B. Adams, F.R.I.B.A., Mr. Alfred W. F. Cross, F.R.I.B.A., Mr. J. Ernest Franck, A.R.I.B.A., Mr. E. Harding Payne, A.R.I.B.A., Mr. James M. Ross, and Messrs. H. Spalding, F.R.I.B.A., and R. H. Spalding, A.R.I.B.A. Each competitor is to be paid a fee of twenty-five guineas, except in the case of the successful design, where the commission to the architect will be five per cent. on the amount of the contract. The committee, acting in conjunction with the Borough Surveyor (Mr. Hugh Mair, M.I.C.E.), is to adjudicate upon the competitive designs and report thereon to the Council.

BOOKS RECEIVED.

LOCKWOOD'S BUILDERS' AND CONTRACTORS' PRICE BOOK, 1905. Edited by F. T. Miller, A.R.I.B.A. (Crosby Lockwood & Son. 4s.)

QUARTERLY JOURNAL OF THE ROYAL SANITARY INSTITUTE. (E. Stanford. 2s. 6d.)

SANITARY LAW AND PRACTICE. By B. W. Robertson, M.D., and Charles Porter, M.D. (The Sanitary Publishing Co. 10s. 6d.)

THE SEWAGE PROBLEM. By Arthur J. Martin, A.M.Inst.C.E. (The Sanitary Publishing Co. 8s. 6d.)

SIMPLE METHODS OF TESTING SEWAGE EFFLUENTS. By Geo. Thudichum, F.I.C. (The Sanitary Publishing Co. 2s. 6d.)

THE SCIENTIFIC DESIGN OF MASONRY ARCHES. By Thos. Alekander, M.A.I., and A. W. Thomson, D.Sc. (Dublin University Press.)

Correspondence.

A SPRING-GARDENS SITE.

SIR,—In the article on "Spring-gardens, Charing Cross, and Whitehall" in the last number of the *Builder*, there is a slight inaccuracy which is hardly worth while correcting in print, but to which I think I may as well call your attention.

On page 7, column 3, it is stated that the extension of Messrs. Cocks & Biddulph's bank was built on the site of No. 31 (late 20), Spring-gardens. The extension really occupies the site of Nos. 33 and 35.

No. 31 (late 20) is now occupied by the London County Council, Mr. Oldrid Scott's offices having been transferred to No. 35 some years ago.

No. 20 (now 31) was at one time the residence of Lord Brougham.

CHAS. R. BAKER-KING
(Late of 35, Spring-gardens).

The Student's Column.

TYPICAL STRUCTURES IN CONCRETE-STEEL.—II.

A FACTORY BUILDING OF FIVE STORIES.

THE example of construction described and illustrated in the present article is a building recently erected in Philadelphia and used as a machine shop. It has a frontage of 120 ft., and measures 100 ft. from front to back. Fig. 7 is a section of the building showing the five stories in the front portion and the single story extension at the back with a Yorkshire roof. With the exception of the outer walls, which are of brick with stone and terra-cotta facings, the entire structure is of concrete-steel.

A general idea of the building will be obtained by examination of the section, where the outlines of the main structural features are indicated. In the front portion the interior columns are disposed in two parallel rows 18 ft. apart, and the columns in each row are 14 ft. apart centre to centre. They are of concrete, reinforced by four vertical round bars and horizontal flat bars, and, as indicated in the figure, the dimensions of the columns vary from 2 ft. 2 in. square in the basement to 8 in. square in the top story. The columns of each row are connected by concrete-steel main beams, of which the cross-section measures 10 in. wide by 14 in. deep on each floor, these beams being connected by secondary beams, or floor joists, measuring 6 in. wide by 12 in. deep.

The roof is formed of concrete-steel beams, with a covering of slag laid on concrete, and at the back there is a small tower containing a water tank. All the floor slabs between the main beams and joists are of concrete, and the floors of the basement and ground floor are finished with cement.

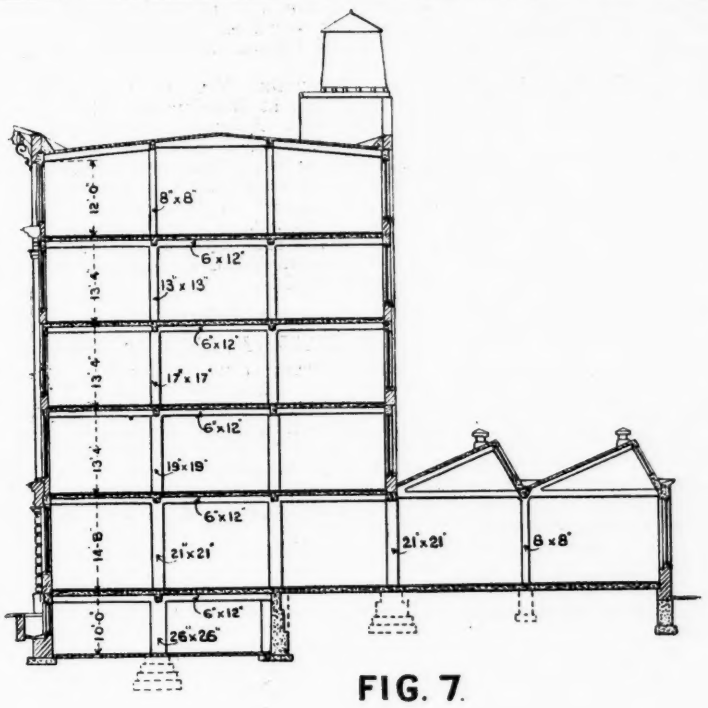

FIG. 7.

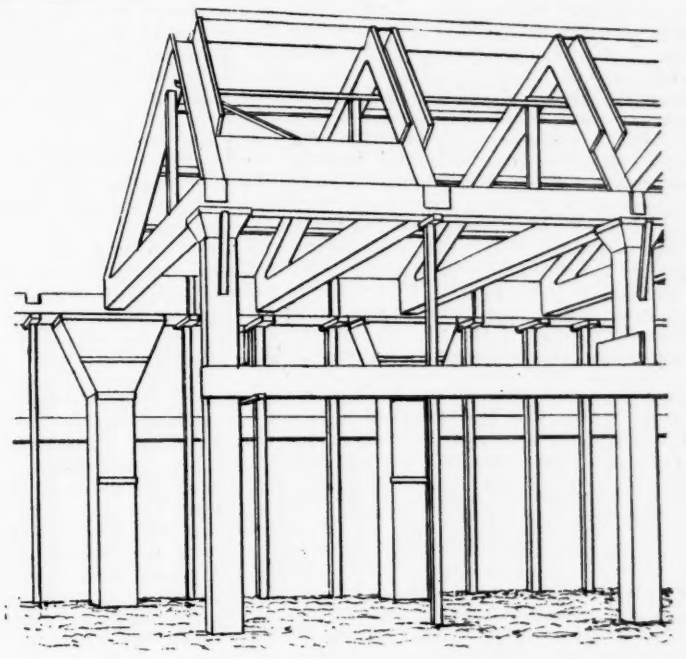

FIG. 11.

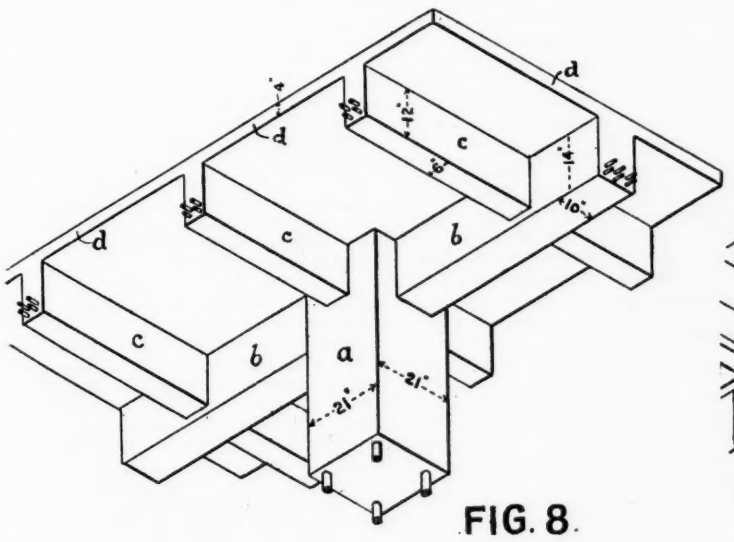

FIG. 8.

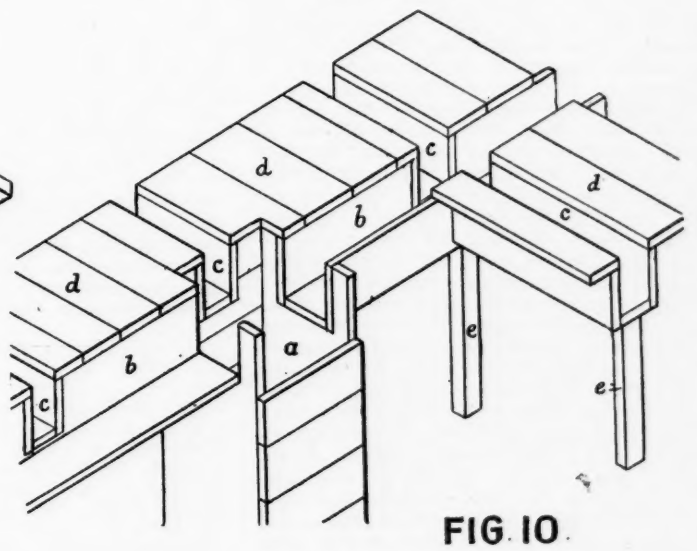

FIG. 10.

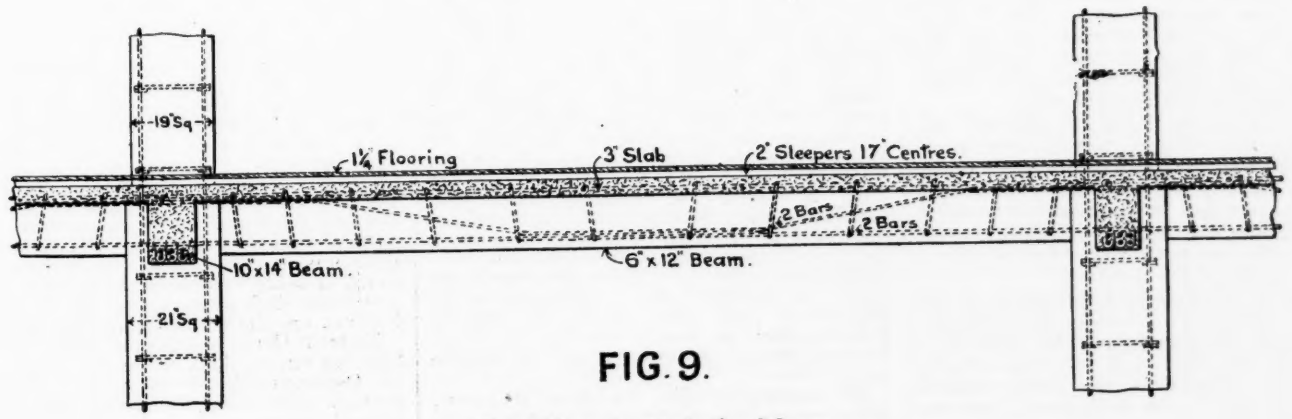

FIG. 9.

Illustrations to Student's Column.

At the back of the front portion of the building the outer wall is supported by a row of concrete-steel columns, with a cross-section of 21 in. square, connected with concrete-steel girders.

The interior columns, beams, and roof of the back portion are also of reinforced concrete, the roof covering of the longer slopes being of slag laid on concrete and supported by concrete-steel principals, the shorter slopes being filled with skylights between the principals.

As usual in construction of the kind, the whole of the columns, main and secondary beams, and floor slabs, form a monolithic structure.

Fig. 8 is an isometric drawing of a portion of the work, including part of one column (*a*), of two girders (*bb*), of three joists (*ccc*), and of the floor slab (*dddd*). This figure shows the appearance presented by the underside of the first floor.

The details of the reinforcement in the columns and beams are shown in Fig. 9, wherein are represented parts of the columns above and below the first floor and a portion of the first floor itself. In the columns the reinforcement consists of four vertical bars passed through holes in sets of four flat bars spaced about 16 in. apart in a vertical direction. In the 6-in. by 12-in. beam, or joist, the reinforcement comprises two horizontal bars in the tension area, these bars running through the columns so as to form continuous reinforcement; and two bent bars, providing for tension in the upper portion of the cross-section near the ends and in the lower portion of the section at the middle of the beam. There are also two horizontal bars near the upper surface of the beam and a series of stirrups for assisting the concrete to resist shearing stresses. The reinforcement of the main beams is not fully shown in the drawing, as the section of these is taken at the middle of the span, where the lower horizontal bars and the bent bars meet, and the upper horizontal bars are omitted.

The floor slab between the girders and joists is 3 in. thick and covered with 1¼-in. floor boards of maple laid on 2-in. sleepers 17 in. apart centre to centre. This method of floor covering applies to all the upper stories of the building.

Fig. 10 is an isometric drawing of the moulds and centring employed for forming the concrete of the columns, girders, joists, and floor slab. The upper end of the column mould (*a*) is framed to the moulds for the girders (*bb*) and for the joists (*ccc*), and the floor centring (*ddd*) is nailed down to the side boards of the moulds. In addition to the support afforded by the column moulds, the beam moulds are supported by means of struts, as (*ee*), placed at suitable intervals.

In depositing the concrete, the column moulds were filled up to floor level, all the other moulds were then filled, and the floor centring was covered with the least possible delay, so as to avoid any discontinuity between the different portions of the work. The joints of the column reinforcement were made well above the different floors, and numerous bolts were set in the floor slab for the purpose of fixing the timber sleepers for the maple boarding. Other bolts were built into the lower part of the girders for the attachment of hangers for the shafting to be used for running machinery. These bolts were passed through holes in the bottom boards of the various moulds.

Fig. 11 is a perspective drawing of the moulds used for the Yorkshire roof extension at the back of the building. It will be seen from this illustration that the entire framework is of concrete. The drawing here reproduced has been made from a photographic view taken at ground level before the moulds were completed by the addition of the boarding upon which the concrete roof covering was deposited. The figure includes a portion of the forms used for the construction of one section of the single-story extension.

In the background will be observed the moulds for the columns to which are transmitted the loads carried by the back wall of the five-story building and the weight of the wall itself. The columns in question are provided with bracketing for the more adequate support of the continuous main girder running along the whole width of the structure.

Part of the main girder mould shown at the extreme left-hand of the drawing is incomplete, the full depth being as represented in the body of the drawing. Several of the struts for the intermediate support of the girder moulds will also be seen in the background, and one in the foreground.

In addition to the skylights in the shorter slope of the roof, several openings were provided in the longer slope for ventilators. These openings were formed by placing core boxes upon the roof boarding and leaving the board inside the core free from concrete when the roof slab was formed.

Owing to the uniformity of construction of the different floors, the same moulds could be used in succession for all the stories, and the only modification necessary was the diminution of the cross-section of the column moulds in accordance with the dimensions shown in Fig. 7.

Similarly, only one set of moulds was required for the single-story extension, as this was erected in sections of uniform area, and the temporary framework was moved from section to section until the whole of the structure was completed.

In this way the cost of the forms was reduced to a minimum, so that it bore but a very small proportion to the total value of the work.

Being designed for the use of machinery, the ground floor was proportioned for a uniformly distributed load of 300 lb. per sq. ft., the first floor for a similar load of 200 lb. per sq. ft., and each of the floors above for a load of 150 lb. per sq. ft.

This example of construction has been selected for its extreme simplicity as well as for its general compliance with types of design very familiar to architects and builders in this country, and notably in the respect that all the outer walls are of the self-sustaining type. For this reason there is nothing to prevent the erection of similar buildings even under the regulations of the present London Building Act.

With the exception of the extended portion at the rear of the main structure, there is nothing in the building materially different from the skeleton of an ordinary dwelling-house, office building, or hotel. For the design of such a building, the assistance of a concrete-steel expert is quite unnecessary. Any architect who is accustomed to the calculation of floor and column loads could easily design the necessary concrete-steel members by the aid of the formulæ given in our previous series of articles, and the division of the various floors into rooms of the required sizes could easily be accomplished by means of any approved system of fire-resisting partitions, the weight of which would come upon the main and secondary girders. In the case of light partitions for very small apartments, such as lobbies, ante-rooms, dressing-rooms, or small offices of any kind, it would be perfectly easy to add small joists if the floor slabs themselves were found inadequate to sustain the concentrated load of the partitions.

The owner of the building here illustrated was induced to adopt concrete-steel construction in consequence of its fire-resisting properties and also because of its low cost as compared with that of a steel-frame building. The structure was designed and erected under the superintendence of Messrs. Ballinger & Perrot, architects, Philadelphia.

OBITUARY.

MR. PERKINS.—The decease, on December 23, is announced of Mr. Arthur Edward Perkins, of Finchley, and formerly of John-street, Bedford-row, W.C., in his 51st year. Mr. Perkins was elected a Fellow of the Royal Institute of British Architects on January 4, of last year.

MR. HOBBS.—The death is announced also of Mr. Edwin Hobbs, senior member of the firm of Messrs. Earp, Hobbs, & Miller, architectural sculptors and carvers, of London and Manchester. Of some of the work executed by Mr. Earp and the firm we may cite the pulpit, with lectern and gas brackets of brass, Acomb parish church, Yorkshire; the carving of the memorial to the late Sir William Bagge, being a travellers' rest, at Swaffham (illustrated in the *Builder* of June 2, 1883); the credence table and reredos, all the carving, and the figure of the Good Shepherd in the tympanum over the door of the mission church and schools, Bedfordbury, Covent Garden (November 23, 1861); the alabaster and marble reredos, St. Margaret's, Lee; the pulpit, St. Peter's, Eaton-square; the reredos, St. James's, West Hackney; and the interior carving in the India Office.

MR. ELKINGTON.—Mr. Frederick Elkington, eldest son of Mr. G. Richards Elkington, the patentee of electro-plating, died, aged 78, at his residence, Sion Hill, Wolverley, near Kidderminster, on January 2. Mr. Elkington became a freeman of the Goldsmiths' Company in 1885, and entered the livery of that Company five years afterwards. He was a member of the governing body of the Imperial Institute, and a Chevalier of the Order of Francis Joseph. His labours in the advancement of the silversmiths' art and the decorative treatment of the precious metals were recognised by his admission, fifty years ago, as a Chevalier into the Legion of Honour, and his advancement as an Officer in 1875, at the Paris Exhibition. With his brothers he built St. Mary's Church, Burry Port, in Carmarthenshire, in memory of their father, and he generously supported church work in Birmingham, his native city. Mr. Elkington occupied from time to time various offices in the county of Worcester, of which he was a deputy-lieutenant, and in 1878 high sheriff. By his wife, a daughter of the late Mr. William Bartleet, of Redditch, whom he married in 1850, he leaves three sons and four daughters. He was an enthusiastic member of the Volunteer force, and formed a valuable collection of Chinese and Japanese enamelled work.

MR. AICKMANN.—Mr. George Aickmann, A.R.S.A., died at Edinburgh on last Sunday, aged 75 years. About thirty-five years ago, having been until that period an engraver and lithographer, Mr. Aickmann devoted himself to landscape painting, and was shortly afterwards elected an Associate of the Royal Scottish Academy. He contributed many articles to the art journals, and possessed an extensive knowledge of the works and careers of Scottish artists.

GENERAL BUILDING NEWS.

NEW CHURCH, SEATON DELAVAL.—On the 25th ult. St. Stephen's Mission Church at Seaton Delaval was opened. The new building is of brick, with stone facings and a red tiled roof. It is built in the Elizabethan style, and has been erected from plans by Mr. Errington, architect, by Mr. Jos. Stobbs, contractor, Cramlington, at a cost of about 2,000*l*.

PROPOSED NEW CHURCH, DUNDEE.—Building operations are shortly to be commenced on a new church which is to be erected in the Chepington district, Dundee, for the United Free Congregation. The plans have been prepared by Mr. T. M. Cappon, who, after competition, was selected as architect. The building will occupy a site at the corner of Arklay-street and Esk-street. The plan is cruciform with side and end galleries. Seating accommodation is provided for 800 persons. In addition to the church proper, there will be a hall, capable of seating about 350 persons, with vestry, classroom, and the necessary retiring-rooms. The estimated cost of the work is 4,750*l*.

ROMAN CATHOLIC SCHOOLS, SHEPSHED.—New Roman Catholic Schools have been erected at the corner of Field-street and Britannia-street, and fronting the road to and adjoining the public recreation ground. The new additions adjoin the infant school in Britannia-street, and provide accommodation for 220 mixed scholars, in four classrooms, which, when opened, forms a room 88 ft. by 24 ft. Separate entrances are provided for boys and girls, each connected with a corridor running the whole length of the school. From the corridor are built cloakrooms and lavatories, and also a private room for the headmaster. The schoolroom floor is of wood blocks. The internal walls are lined with white glazed bricks to a height of 4 ft., and above this they are finished with cement stucco. The internal woodwork and roof principals are of pitch-pine varnished, and the ceiling is finished in white plaster. The external finish of the new additions is of red pressed bricks, relieved by stone dressings. Messrs. Atkin Brothers and Mr. J. Webster, of Shepshed, were the builders, and the architects were Messrs. McCarthy & Co.

VICARAGE, TUNBRIDGE WELLS. — A new vicarage is being erected at Tunbridge Wells on a site at the junction of Calverley-road and Calverley Park-gardens. The work is being carried out by Messrs. Strange & Sons, Tunbridge Wells, from designs by Mr. Percy K. Allen, architect, of the same town.

CHURCH-ROOM, BRIGHTON.—The foundation-stone was recently laid of a new church-room which is being erected in connexion with St. Martin's church at Brighton. Messrs. Clayton & Black are the architects for the work.

MISSION HALL, PONTYPOOL.—The new Presbyterian mission hall, which has been erected in Osborne-road, Pontypool, was recently opened. The walls are built with Govilon dressed stone, with Bath stone dressings, and the windows are of stained glass. The

principal entrance leads into a vestibule, from which access is obtained to the ground floor of the hall and to the stairs leading to the gallery. The latter is also reached directly from the street, without stairs, by means of an entrance on the higher level at the side. The gallery is carried round three sides of the building. The roof is an open-timbered one, lined with match-boarding. At the end of the hall are the platform and choir gallery. The hall is lit throughout with electricity. The builders are Messrs Morgan & Evans, Pontnewynydd, and the architects Messrs. Habershon, Fawckner, & Co., Newport and Cardiff.

WESLEYAN METHODIST HALL, SHOTLEY BRIDGE.—The new Wesley Hall at Shotley Bridge has just been completed at a cost of about 1,000*l*. The building, which is 53 ft. by 31 ft., consists of classrooms, a minister's vestry, and other adjuncts. The architect is Mr. W. Spence, of Shotley Bridge.

LINCOLN BANK, GRIMSBY.—The new buildings for the Union of London and Smith's Bank occupy the site of the garden in front of the old bank. On the ground floor the bank office is 43 ft. by 37 ft., and is approached from the street through a vestibule which is panelled in teak. The public space is some 11 ft. across and is also panelled. The back portion of the office is lit with some clerestory windows over the rear buildings, which consist of a waiting-room, manager's room, and two strongrooms, with a lavatory for the use of the clerks, and a bookroom, stationery store, etc., beyond. Access is obtained from the passage leading to Osborne-street for the use of the staff, where there is also a tradesmen's entrance for the residence over the bank. The private entrance is at the side of the bank, shut off from Victoria-street West by a wrought-iron gate, and leads to the residence on the first, second, and third floors. Externally, in front, the building is of Ancaster stone. The rear elevation is faced with white Suffolk bricks, with the exception of one portion which is covered with rough-cast, and the roofs are slated with green Tilberthwaite Westmorland slate. The architect for the building is Mr. W. Campbell Jones, of London. The builders are Messrs. Hewins & Goodhand, of Grimsby; and the electric light work has been done by Mr. Dolby.

BANK PREMISES, LOCHEE, DUNDEE.—The new premises of the Dundee Savings Bank in High-street, Lochee, have just been opened. The building is built of stone from the Camperdown Quarries. The style is Renaissance, the central feature being two detached composite columns, with carved capitals flanked with rusticated pilasters and supporting an enriched pediment. The doorway is on one side, and is also enriched with Ionic pilasters and an entablature, the tympanum of which has the arms of the Savings Bank. The bank is entered through a vestibule and a panelled and carved doorway leading to an interior measuring 40 ft. by 32 ft. The walls have a panelled dado of oak. The contractors were:—James Binny & Co., masons; John Scott & Son, joiners; James Laburn, plasterer; David Hutcheson, slater; David Brown, plumber; J. Mackay & Son, painters; David Keay, heating engineer; Thomas Russell, ornamental ironworker; and Chatwood, strong-room and safe manufacturers. Mr. Peter Barron was the clerk of works, the architects being Messrs. Johnston & Baxter.

NEWSPAPER OFFICES, SOUTHAMPTON.—New premises are now being erected in Above-Bar-street, Southampton, for the proprietors of the *Hampshire Advertiser*. The frontage will occupy a space of 36 ft. 6 in., whilst the depth will be 244 ft., the work being carried out in orange-coloured bricks with Monks Park stone dressings, with two piers of Robin Hood stone. The woodwork used will be wainscot oak. The flooring will be composed of wood blocks, the staircase will be of fireproof construction, and two electric lifts will also be employed. The whole of the premises will be lit by electricity. Mr. William Burrough Hill, architect, has designed the building, and Messrs. Dyer & Sons are the contractors.

HOSPITAL, MORTON, NEAR SHEFFIELD.—The new isolation hospital at Morton was opened recently. The contract for the hospital was let for 6,800*l*. to Messrs. Lee & Kirk, of Alfreton and Chesterfield. The hospital is built in the form of a rectangle. There are four blocks—the administrative, fever, laundry, and isolation blocks. The architect was Mr. Bolshaw, of Southport.

BELFAST BUILDING TRADE.—The history of the building trade in the city during the year shows some little improvement upon the previous year, although it has still been less satisfactory than could have been wished. In the beginning of the year large contracts were scarce, but afterwards things improved, and a number of important works were entered upon, including the building of several warehouses and extensions to business premises in the centre of the city. The Belfast Cathedral, though formally opened by the Lord Lieutenant in June last, is still unfinished; so is the new City Hall. Work is going on at both, but their completion is, of course, a good way in the future.

BRADFORD BUILDING TRADE.—Complaint is made that the building trade in Bradford has been very depressed during the past year, and especially in the last few months. In the opinion of a prominent member of the trade, the depression has not been so acute for nearly twenty years past. Amongst local builders, the belief prevails that practically all classes of houses have been overbuilt. In the trade there is, no doubt, some little apprehension as to the extent to which municipal enterprise may go in the matter of providing working-class dwellings, and it is evident that the effect of the scare created by the Faxfleet-street scheme has not yet passed away. At present there is a disposition to obtain, if possible, a statement of the policy of the Corporation on this subject before further speculation is proceeded with. There is plenty of land in the market at reasonable prices, and it is simply waiting for the trade of Bradford to improve, and then no doubt a period of renewed activity will set in. During the earlier part of the year the properties most in demand have been small through houses, at a rental of not more than 6s. a week, and a fairly good number of these have been erected.—*Yorkshire Observer.*

BATHS, EASTBOURNE.—On the 4th inst. the Mayor of Eastbourne opened the new Corporation swimming and slipper baths which have been erected in Motcombe-lane, Old Town. There are twelve slipper-baths for men, and three for women, and a shower-bath. The swimming-bath is 60 ft. long and 24 ft. broad, with thirty-six dressing-boxes. The building was designed by the Borough Surveyor, Mr. W. Chapman Field.

STAINED GLASS AND DECORATION.

WINDOW, LEVEN CHURCH, FIFE.—A three-light east window has just been executed and fixed at Leven church by Messrs. Percy Bacon & Brothers. The centre light contains three figures, the top depicting Our Lord in Majesty, with Moses and Elias in the two spaces below, while on each side in the outer lights are St. Peter and St. Paul; under the two latter are angels bearing scrolls with texts.

FOREIGN.

FRANCE.—The Municipal Council of Paris has determined on the establishment of an "Ecole des Arts Appliqués à l'Industrie," in the same locality and under the same management as the Bernard Palissy School. ——At the Hôtel des Sociétés Savantes there is to be opened, on the 22nd inst., an exhibition of drawings and photographs of the principal works executed in concrete-steel, in France and in other countries, during the last year.——The jury in the competition for new schools at Charenton have awarded the first premium to M. Chas. Morice, architect, of Paris.——The Municipality of Paris has decided on the construction of three new fire brigade barracks.——The old Château of Dieppe has been classed among the Monuments Historiques, and is to be converted into a local museum.——Public works are to be undertaken at Grenoble at a cost of three and a half million francs. The rebuilding of the market-halls forms a portion of the scheme.——The Municipality of Nancy have decided on the construction of a large new theatre, at a cost of two million francs.—— The Government has given its approval to a scheme for transforming the lake of Berre, near Marseilles, into a harbour of refuge. The cost is estimated at about 5,300,000 francs. ——M. de Tizac, who holds an important position in the Department of Fine Art, has been appointed Curator of the Cernuschi Museum in place of M. Causse, who has retired.——The death is announced, at the age of 68, of M. Eustache Bernard, sculptor. He had exhibited many busts and medallions at the Old Salon, and took part in the restoration of the cathedral of Chartres and the Palais de Justice of Grenoble.

GERMANY.—The new Commercial Schools at Cologne are to be built from plans by Dr. E. Vetterlein, at a cost of 2,480,500 marks.—— The plans of MM. Siemens & Halske for a workmen's colony at Charlottenburg have been accepted; they provide for 1,200 inhabitants.——The Salvator Church at Duisburg, which dates from the XVth century, has been restored under the direction of Herr Otter. ——The theatre at Brunswick, which has been rebuilt under the direction of Herr Seeling, is completed.——The new Law Courts at Kreuznach, from plans by Herr Thoemer, have been completed.

SWITZERLAND.—The collection of household furniture and ornaments from the Engadine, made by Mr. R. Campbell and Herr Nikolaus Hartmann, is to be placed in a suitable museum, to be built for the purpose at St. Moritz.——A new church is to be built at Balsthal, from plans by MM. La Roche, Stähelin, & Co., of Basle.——The foundation of the new historical museum at Geneva was laid on September 17; the museum is being built from the designs of Herr Max Camoletti.——The Botanical Museum at Geneva, from plans by Herr Junot, has been completed at a cost of 195,000 francs.——The Orphanage at Rathausen, which was burned down in May, 1903, has been rebuilt under the direction of Herr Müller, at a cost of 300,000 francs.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS. —The Canadian Government have opened a City Branch Office at 78, Basinghall-street. The office is supplied with Canadian books of reference, directories, reports, etc.; and ultimately it is proposed to install a small display of the leading Canadian products and resources.——Messrs. Blackwell & Thomson, architects, of Leicester and Kettering, have dissolved partnership, and in future Mr. Howard H. Thomson will practice at the Leicester office, Halford-chambers, Halford-street.——In consequence of his recent appointment as Surveyor to the City of London, Mr. Sydney Perks, architect and surveyor, has transferred his practice to Mr. E. Greenop, of Falcon-court, 32, Fleet-street, who will continue it in conjunction with his own practice.——Messrs. Penman & Co., boiler makers, etc., Glasgow, have appointed Messrs. Andrew Brown & Co., 110, Cannon-street, E.C., as their London agents.——Mr. W. Wonnacott's new address was incorrectly given in our last as "119, Piccadilly." It should have been "199."

ARBITRATION CASE *re* MANCHESTER SCHOOL OF TECHNOLOGY.—Sir William Emerson, the arbitrator appointed to settle differences existing between Messrs. Robert Neill & Sons, builders, of Manchester, and the Manchester Corporation, which had arisen in connexion with the erection of the School of Technology, has directed that the Corporation should pay to Messrs. Neill, the sum of 19,920*l*., which sum was to be a full satisfaction of their claims, the Corporation to pay their own costs, and also the costs of Messrs. Neill, which were to be taxed. Sir William Emerson also awarded and fixed his own fees and costs, including the fees of Mr. Young, a London quantity surveyor, at the sum of 988*l*., and directed that such sum should also be paid by the Corporation. For the purpose of receiving the above award and the report of the Deputy-Town Clerk thereon, a special meeting of the Manchester Education Committee was held at the School of Technology on the 3rd inst., Alderman Sir James Hoy presiding. Mr. J. H. Reynolds (Principal of the school) read the report, which stated that, under the contract, dated July 19, 1895, between Messrs. Robert Neill & Sons and the Corporation, and the supplemental agreement, dated August 16, 1902, between the aforementioned parties, an arbitration had taken place for the settling of certain differences which were partly in connexion with the price to be paid for extra work, and partly in respect of claims put forward by Messrs. Neill for damages alleged to be due to delay caused by the Corporation and other contractors of the Manchester Corporation, and certain other matters incidental to the work. Messrs. Neill's claims, as formulated by them, consisted of the items amounting to 27,427*l*. 6s., together with the sum of 11,055*l*. 13s. 3½d., being the difference between the claim for extra work at the price proposal by them, these amounts altogether making a total of 38,482*l*. 19s. 3½d.. The question of price was referred by consent of all parties to Mr. Morgan H. Young, a London quantity surveyor, who sat at the School of Technology on eleven days in May, and was assisted in his investigation by Mr. Windsor, quantity surveyor for the committee, and Mr. Dale, for Messrs. Neill & Sons. It was arranged that Mr. Young's findings should be embodied in the award to be made by Sir William Emerson. Sir William Emerson visited Manchester and heard the parties with respect to the claim, and gave his award as detailed above. The chairman moved that the report read be approved, and

that, under the direction of the Town Clerk, the sums of 19,902*l.* and 988*l.* referred to therein be paid. This was seconded by Councillor Fildes, and carried.—*Manchester Courier.*

SALE OF CARVINGS BY GRINLING GIBBONS.—Owing to the alterations following on the recent sale of Wootton Wawen Hall, near Stratford-on-Avon, the very characteristic carving in sycamore wood of game, fruit, etc., by Grinling Gibbons, which adorned the old drawing-room fireplace, was put up to auction last week at Messrs. Knight, Frank, & Rutley's galleries, and was purchased by Messrs. White, Allom, & Co. for 175 guineas.

FROSTERLEY MARBLE.—The directors of the Harehope Mining and Quarrying Company have presented to the American Government the specimens of "Frosterley marble" which they sent from the county of Durham to the St. Louis Exhibition. The gift is accompanied with a collection of photographs in illustration of those portions of the several churches in England, in the building of which the marble has been used during successive centuries—amongst them being Durham Cathedral.

WAR MEMORIAL, LICHFIELD CATHEDRAL.—A new window has been inserted in the south transept of Lichfield Cathedral, to commemorate the services of the 1st Battalion of the South Staffordshire Regiment (originally raised in that city more than 200 years ago as the 38th Foot), and of their comrades of the Militia and Volunteer Battalions, in the South African campaign, 1899-1902. The stained glass is by Mr. C. E. Kempe; the window, having three lights, was designed after the Early English style by Mr. John Oldrid Scott, architect to the Cathedral, and has been inserted in place of a debased Perpendicular window.

ROYAL SANITARY INSTITUTE.—A prize, under the name of the Henry Saxon Snell Prize, has been founded by the Institute to encourage improvements in the construction or adaptation of sanitary appliances, and is to be awarded by the Council at intervals of three years, the funds being provided by the legacy left by the late Henry Saxon Snell, F.R.I.B.A. The first prize, which will consist of 50*l.* and a medal of the Institute, is offered in the year 1905 for an essay on "Domestic Sanitary Appliances, with Suggestions for their Improvement." Essays must be delivered before 4 p.m. on or before March 30, 1905, addressed to the Secretary of the Royal Sanitary Institute, 72, Margaret-street, W., from whom all further particulars may be obtained.

Legal.

EMPLOYERS' LIABILITY ACT:

QUESTION OF HORSES IN BUILDERS' WORK.

AT the Brompton County Court, on Monday, before Mr. Clement Lloyd—sitting as deputy-judge—and a jury, Edward Saunders, carpenter and joiner, living at Croydon, brought an action, under the Employers' Liability Act, against Messrs. Lole & Lightfoot, builders and contractors, Manresa-road, Chelsea, S.W. The plaintiff's claim was in respect of personal injuries, said to have been sustained owing to negligence on the part of the defendants or their servants.

Mr. W. Frampton, counsel, appeared for the plaintiff, and Mr. W. Shakespeare, counsel, for the defendants.

Plaintiff's counsel stated that his client had been employed by the defendants for about seven years, and, on September 5 last, was told to go with a cartload of office fittings to be fixed at Thames-street. The foreman, Nicholls, told the plaintiff to sit at the back of the cart, and while Nicholls was talking to someone at the side of the cart, the driver called out:—"You must be quick; I can't hold this horse," or words to that effect. A second later the animal dashed forward, slued the tail-board round, throwing the plaintiff violently into the road. By the accident the plaintiff sustained a fractured thigh, a sprained hand, and a cut face. For about thirteen weeks the man was detained at St. George's Hospital, and he was still unable to do any work. Counsel submitted that the negligence on the part of the defendants consisted in using in the business a horse which had not been properly exercised, and which was restive and dangerous for the work.

The plaintiff bore out his counsel's statement.

In cross-examination, he said he knew nothing about horses, and could not say that the animal in question was vicious.

The defendants' carman, called for the plaintiff, said that the horse was not at all restive, and never showed any vice.

For the defence, Mr. Richard Lole, of the defendant firm, said that, although the horse was of high spirits, it had no vice. No complaints had ever been made to him about the animal.

A former carman of the defendants said he never had any difficulty in controlling the horse in question.

Other evidence of similar character having been given,

The jury found that there was no negligence on the part of the defendants so far as the use of the horse was concerned; that there was negligence on the part of the driver, who was, they considered, "the main cause" of the accident; that there was negligence on the part of the defendants in employing such a driver.

Looking upon this as a verdict for the plaintiff, the jury assessed the damages in his favour at 50*l.* As, however, the driver—whose negligence the jury considered to be the real cause of the accident—was a fellow servant, to whose orders the plaintiff was not bound to conform, he (plaintiff) could not recover under the Act. This was pointed out by his Honour.

It was understood that the plaintiff would apply for compensation under the Workmen's Compensation Act at a later date.

PATENTS OF THE WEEK.

APPLICATIONS PUBLISHED.*

24,839 of 1903.—B. K. WEBBER: *Windows.*

A sash window, wherein to the lower part of each side of the frame of each window sash is attached a weighted cord, chain, or equivalent, that extends from the sash upwardly within a groove in the face of the adjacent pulley stile and over a guide pulley.

838 of 1904.—G. F. BATES: *Building Construction or Brickwork, and Bricks and Blocks, or Quarries for use therein.*

This invention relates to building construction or brickwork, and to bricks to be used exclusively as headers and blocks or quarries, to be used exclusively in lieu of stretchers. According to this invention, grooved bricks or headers are provided, which are arranged in series to carry between them transversely-disposed blocks or quarries with the edges or tongue of which they interlock, and with which they form continuous cavities, which may be filled up with cement, concrete, or other filling material, by which the whole brickwork may then be strengthened or enforced, or which may be left empty as an air insulation or for the purpose of ventilation, drainage, or for other purposes, or incidentally also for economy, and for minimising the weight of the structure.

3,233 of 1904.—A. S. MOORE: *"Emergency" Doors for Theatres, and the like.*

Means for securing emergency doors in theatres and other buildings, comprising a spring supported platform pivoted at its near edge in the floor of the building, and having in its outer edge a groove adapted for engaging with the bottom of the door; the weight of a person standing upon the platform having the effect of depressing the free end of the latter, and releasing the door.

6,635 of 1904.—G. GRONDAL: *A Kiln for Burning Cement or Reducing or Calcining Ores.*

A kiln for burning cement or reducing or calcining ores, comprising a hollow rotating cylinder or drum slightly inclined to the horizon, a furnace located above the upper end of the cylinder, a shaft located under the lower end of the cylinder, a device for making a gaseous mixture at the lower end of the cylinder, and a feeding device under the said furnace conveying material therefrom to the cylinder, the construction of the said furnace and shaft being such that air, gas, or combustion products may pass from the lower part to the upper part thereof in horizontal passages leading to and fro therefrom.

22,398 of 1904.—M. R. VANDERKLOOT: *Piling.*

A section or unit for sheet piling, consisting of two channel bars secured together face to face in parallel relation, but offset laterally with respect to each other, each channel bar being provided with longitudinal parallel flanges on its opposite face from the other channel, and one of said flanges being a plain flange or lip, while the other is a hooked flange corresponding in interior outline to the exterior outline of the plain flange.

24,574 of 1904.—C. SCHMÜCKER: *Rain-water Pipe Bends.*

A rain-water pipe bend, composed of two longitudinal halves, of which one of the said halves is formed with a groove or recess along its horizontal edges into which the corresponding edges of the other half are fitted and fixed by soldering or brazing.

3,345 of 1904.—G. DUBIUS: *Baths.*

An electric light bath, consisting of a metal bath of suitable size and construction, provided with sides, top, and end pieces to form a cover for the bath, said sides being preferably hinged or pivoted to the sides of the bath, or to supports or standards so as to fold over the bath, and with the top and end pieces to enclose it, said sides, top, or end pieces, or all of them having electric lights arranged on their inner sides, and the top and one of the end pieces having an aperture for the patient's head.

3,381 of 1904.—A. C. WRIGHT: *Screws or Bolts for Use with Roof Gutters.*

This invention relates to screws or bolts for use with roof gutters or spouts. In the manufacture of bolts in accordance with this invention for use with roof gutters or spouts, the blanks are made preferably from malleable cast-iron, and are provided each with a mushroom type or other slotted head, and with a washer forming an integral part of the blank.

3,390 of 1904.—W. WELSBY: *Draught Excluders for Doors.*

A draught excluder, comprising a strip suspended by wires or links from a tumbler lever, the heavy end of which is raised by an incline on the door jamb when the door is closed, the strip being raised when the door is opened by the same lever, the heavy ended lever or bolt having double inclines and notches combined with a holding device also having double inclines and holding notches, and a means for holding the tumbler lever or bolt in its forward position.

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

TO CORRESPONDENTS.

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings photographs, manuscripts, or other documents, or for models or samples, sent to or left at this office, unless he has specially asked for them.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

All communications must be authenticated by the name and address of the sender, whether for publication or not. No notice can be taken of anonymous communications.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article, or to execute or lend a drawing for publication, is given subject to the approval of the article or drawing, when received, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

MEETINGS.

FRIDAY, JANUARY 13.

Institution of Civil Engineers (Students' Meeting).—Mr. James Swinburne on "Theory of Electricity and Magnetism." 8 p.m.

Junior Institution of Engineers (Westminster Palace Hotel).—Lecture (illustrated by Experiments and Lantern Slides) on "The Theory of the Incandescent Mantle," by Professor Vivian B. Lewes. 8 p.m.

MONDAY, JANUARY 16.

Royal Institute of British Architects.—The President's "At Home," No. 9, Conduit-street, Regent-street. From 8.30 to 11 p.m.

Surveyors' Institution.—Mr. A. R. Stenning and Mr. W. Menzies on "Urban and Rural District By-laws, with suggested Amendments." 8 p.m.

Liverpool Architectural Society.—Mr. E. Bertram Kirby on "The Building of York Minster," illustrated by lantern slides. 6 p.m.

TUESDAY, JANUARY 17.

Institution of Civil Engineers.—Mr. L. F. Vernon-Harcourt, M.A., on "The River Hooghly." 8 p.m.

Institute of Sanitary Engineers, Ltd.—7 p.m.

Northern Architectural Association.—Mr. R. P. S. Twizell on "The Evolution of Domestic Architecture." 7.30 p.m.

WEDNESDAY, JANUARY 18.

Builders' Foremen and Clerks of Works' Institution.—Annual meeting of the members. 8 p.m.

Institution of Civil Engineers.—Students' visit to the foundry of Messrs. H. Young & Co., Ltd., Nine Elms Ironworks, Nine Elms-lane, S.W. (Assemble at the works.) 3 p.m.

Edinburgh Architectural Association.—Mr. M. Buchan on "The Electric Lighting of a Country House." 8 p.m.

Glasgow Philosophical Society (Architectural Section: Joint Meeting with Architectural Association).—Professor E. Bourdon on "The Education of the Architect." 8 p.m.

THURSDAY, JANUARY 19.

Society of Antiquaries.—8.30 p.m.

FRIDAY, JANUARY 20.

Royal Institution.—Professor Sir J. Dewar on "New Low Temperature Phenomena." 9 p.m.

Institution of Mechanical Engineers.—Papers to be read and discussed collectively:—"Some Impressions of American Workshops," by Mr. A. J. Gimson; "Waterworks Pumping Engines in the United States and Canada," by Mr. John Barr; "Some Features in the Design and Construction of American Planing Machines," by Mr. Archibald Kenrick, jun.; "Engines at the Power Stations, and at the St. Louis Exhibition," by Mr. Alfred Saxon. 8 p.m.

PUBLISHER'S NOTICES.

Nat. Tel., 6112, Gerrard. Telegrams, "The Builder, London."

THE INDEX (with TITLE-PAGE) for VOLUME LXXXVII. (July to December, 1904) is given as a supplement with this week's issue.

CLOTH CASES for Binding the Numbers are now ready, price 2s. 6d. each; also

READING CASES (Cloth), with Strings, price 9d. each.

THE EIGHTY-SEVENTH VOLUME of "The Builder" (bound), price Twelve Shillings and Sixpence, will be ready on the 23rd inst.

SUBSCRIBERS' VOLUMES, on being sent to the Office, will be bound at a cost of 3s. 6d. each.

CHARGES FOR ADVERTISEMENTS.

COMPETITIONS, CONTRACTS, ALL NOTICES ISSUED BY CORPORATE BODIES, COUNTY AND OTHER COUNCILS, PROSPECTUSES OF PUBLIC COMPANIES, SALES BY TENDER, LEGAL ANNOUNCEMENTS, etc., etc.

Six lines or under ..... 6s. 0d.
Each additional line ..... 1s. 0d.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE AND GENERAL ADVERTISEMENTS.

Six lines (about fifty words) or under ..... 4s. 6d.
Each additional line (about ten words) ..... 0s. 6d.

Terms for series of Trade advertisements, and for front page, and other special positions, on application to the Publisher.

SITUATIONS WANTED (Single-handed—Labour only).

Four lines (about thirty words) or under ..... 2s. 6d.
Each additional line (about ten words) ..... 0s. 6d.

PREPAYMENT IS ABSOLUTELY NECESSARY.

*** Stamps *must not* be sent, but all sums should be remitted by Postal Orders, payable to J. MORGAN, and addressed to the Publisher of "THE BUILDER," Catherine Street, W.C.

Advertisements for the current week's issue are received up to THREE o'clock p.m. on THURSDAY, but "Classification" is impossible in the case of any which may reach the Office after HALF-PAST ONE p.m. on that day. Those intended for the Outside Wrapper should be in by TWELVE NOON on WEDNESDAY.

ALTERATIONS IN STANDING ADVERTISEMENTS or ORDERS TO DISCONTINUE same must reach the Office before TEN o'clock on WEDNESDAY MORNING.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, etc., left at the Office in reply to advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

PERSONS advertising in "THE BUILDER" may have *Replies addressed to the Office*, Catherine Street, Covent Garden, W.C., *free of charge*. Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage. Unused stamps are returned to advertisers the week after publication.

AN EDITION Printed on THIN PAPER, for FOREIGN and COLONIAL CIRCULATION, is issued every week.

READING CASES { NINEPENCE EACH. By post (carefully packed) 1s

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£	s.	d.			
Hard Stocks	1	12	0	per 1000	alongside, in river.	
Rough Stocks and Grizzles	1	8	0	,,	,,	,,
Facing Stocks ...	2	5	0	,,	,,	,,
Shippers	2	5	0	,,	,,	,,
Flettons	1	8	0	,,	at railway depôt.	
Red Wire Cuts ...	1	14	0	,,	,,	,,
Best Fareham Red	3	12	0	,,	,,	,,
Best Red Pressed Ruabon Facing	5	0	0	,,	,,	,,
Best Blue Pressed Staffordshire ...	4	4	0	,,	,,	,,
Do. Bullnose	4	10	0	,,	,,	,,
Best Stourbridge Fire Bricks.....	4	8	0	,,	,,	,,
GLAZED BRICKS.						
Best White and Ivory Glazed Stretchers	12	0	0	,,	,,	,,
Headers	11	0	0	,,	,,	,,
Quoins, Bullnose, and Flats.....	16	0	0	,,	,,	,,
Double Stretchers	19	0	0	,,	,,	,,
Double Headers...	16	0	0	,,	,,	,,
One Side and two Ends	19	0	0	,,	,,	,,
Two Sides and one End	20	0	0	,,	,,	,,
Splays, Chamferred, Squints	20	0	0	,,	,,	,,
Best Dipped Salt Glazed Stretchers, and Header	12	0	0	,,	,,	,,
Quoins, Bullnose, and Flats.....	14	0	0	,,	,,	,,
Double Stretchers	15	0	0	,,	,,	,,
Double Headers...	14	0	0	,,	,,	,,
One Side and two Ends	15	0	0	,,	,,	,,
Two Sides and one End	15	0	0	,,	,,	,,
Splays, Chamferred, Squints	14	0	0	,,	,,	,,
Second Quality White and Dipped Salt Glazed	2	0	0		less than best.	

BRICKS, &c.—(*continued*).

	s.	d.		
Thames and Pit Sand.....	7	0	per yard,	delivered.
Thames Ballast.....	6	0	,,	,,
Best Portland Cement	29	0	per ton,	,,
Best Ground Blue Lias Lime	20	0	,,	,,

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime.....12s. 0d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 6d. per ton at rly. dpt.

STONE.

	s.	d.		
BATH STONE—delivered on road waggons, Paddington Depôt	1	6½	per ft. cube.	
Do. do. delivered on road waggons, Nine Elms Depôt	1	8½	,,	,,
PORTLAND STONE (20 ft. average)—				
Brown Whitbed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf...	2	1	,,	,,
White Basebed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf...	2	2½	,,	,,

	s.	d.		
Ancaster in blocks.....	1	11	per ft. cube,	deld. rly. depôt.
Beer ,, ...	1	6	,,	,,
Greenshill ,, ...	1	10	,,	,,
Darley Dale in blocks...	2	4	,,	,,
Red Corsehill ,,	2	5	,,	,,
CloseburnRedFreestone	2	0	,,	,,
Red Mansfield ,,	2	4	,,	,,
YORK STONE—*Robin Hood Quality.*				
Scappled random blocks	2	10	,,	,,
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	3	per ft. super.	,,
6 in. rubbed two sides ditto, ditto	2	6	,,	,,
3 in. sawn two sides slabs (random sizes)	0	11½	,,	,,
2 in. to 2½ in. sawn one side slabs (random sizes)	0	7½	,,	,,
1½ in. to 2 in. ditto, ditto	0	6	,,	,,
HARD YORK—				
Scappled random blocks	3	0	per ft. cube.	,,
6 in. sawn two sides, landings to sizes (under 40 ft. super.)	2	8	per ft. super.	,,
6 in. rubbed two sides ditto	3	0	,,	,,
3 in. sawn two sides (slabs random sizes)	1	2	,,	,,
2 in. self-faced random flags	0	5	,,	,,

	£	s.	d.		
Hopton Wood (Hard Bed) in blocks	2	3	per ft. cube.	deld. rly. depôt.	
,, ,, ,, 6 in. sawn both sides landings	2	7	per ft. super.	deld. rly. depôt.	
,, ,, ,, 3 in. do.	1	2½	,,	,,	

SLATES.

in.	in.	£	s.	d.		
20 × 10 best blue Bangor		13	2	6	per 1000 of 1200 at r. d.	
20 × 12	,, ,,	13	17	6	,,	,,
20 × 10 first quality	,,	13	0	0	,,	,,
20 × 12	,, ,, ,,	13	15	0	,,	,,
16 × 8	,, ,, ,,	7	5	0	,,	,,
20 × 10 best blue Portmadoc		12	12	6	,,	,,
16 × 8	,, ,,	6	12	6	,,	,,
20 × 10 best Eureka unfading green .		15	17	6	,,	,,
20 × 12	,, ,,	18	7	6	,,	,,
18 × 10	,, ,,	13	5	0	,,	,,
16 × 8	,, ,,	10	5	0	,,	,,
20 × 10 permanent green		11	12	6	,,	,,
18 × 10	,, ,,	9	12	6	,,	,,
16 × 8	,, ,,	6	12	6	,,	,,

TILES.

	s.	d.		
Best plain red roofing tiles .	42	0	per 1000 at rly. depôt.	
Hip and Valley tiles ...	3	7	per doz.	,, ,,
Best Brosely tiles.....	50	0	per 1000	,, ,,
Do. Ornamental tiles	52	6	,,	,, ,,
Hip and Valley tiles ...	4	0	per doz.	,, ,,
Best Ruabon red, brown, or brindled do. (Edwards)	57	6	per 1000	,, ,,
Do. Ornamental do	60	0	,,	,, ,,
Hip tiles	4	0	per doz.	,, ,,
Valley tiles	3	0	,,	,, ,,
Best Red or Mottled Staffordshire do. (Peakes).....	51	9	per 1000	,, ,,
Do. Ornamental do.....	54	6	,,	,, ,,
Hip tiles	4	1	per doz.	,, ,,
Valley tiles	3	8	,,	,, ,,
Best "Rosemary" brand plain tiles.....	48	0	per 1000	,, ,,
Best Ornamental tiles	50	0	,,	,, ,,
Hip tiles	4	0	per doz.	,, ,,
Valley tiles	3	8	,,	,, ,,
Best "Hartshill" brand plain tiles, sand faced.	50	0	per 1000	,, ,,
Do. pressed.....	47	6	,,	,, ,,
Do. Ornamental do	50	0	,,	,, ,,
Hip tiles	4	0	per doz.	,, ,,
Valley tiles	3	6	,,	,, ,,

WOOD.

	At per standard. £	s.	d.	£	s.	d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in	15	10	0	16	10	0
Deals: best 3 by 4.....	14	10	0	15	10	0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11	10	0	12	10	0
Battens: best 2½ by 6 and 3 by 6 ..	0	10	0	less than 7 in. and 8 in.		
Deals: seconds	1	0	0	less thn best		
Battens: seconds	0	10	0	,, ,, ,,		
2 in. by 4 in. and 2 in. by 6 in....	9	0	0	9	10	0
2 in. by 4½ in. and 2 in. by 5 in....	8	10	0	9	10	0
Foreign Sawn Boards—						
1 in. and 1¼ in. by 7 in.	0	10	0	more than battens.		
¾ in.	1	0	0	,,		

WOOD (*continued*).

	At per load of 50 ft. £	s.	d.	£	s.	d.
Fir timber: best middling Danzig or Memel (average specification)	4	10	0	5	0	0
Seconds	4	5	0	4	10	0
Small timber (8 in. to 10 in.) ...	3	12	6	3	15	0
Small timber (6 in. to 8 in.)	3	0	0	3	10	0
Swedish balks	2	15	0	3	0	0
Pitch-pine timber (30 ft. average)	3	5	0	3	15	0
JOINERS' WOOD.	At per standard.					
White Sea: first yellow deals, 3 in. by 11 in	23	0	0	24	0	0
3 in. by 9 in.	21	0	0	22	10	0
Battens, 2½ in. and 3 in. by 7 in.	17	0	0	18	10	0
Second yellow deals, 3 in by 11 in.....	18	10	0	20	0	0
,, ,, 3 in. by 9 in.	17	10	0	19	0	0
Battens, 2½ in. and 3 in. by 7 in.	13	10	0	14	10	0
Third yellow deals, 3 in. by 11 in. and 9 in.	15	10	0	16	10	0
Battens, 2½ in. and 3 in. by 7 in.	11	10	0	12	10	0
Petersburg: first yellow deals, 3 in. by 11 in.	21	0	0	22	10	0
Do. 3 in. by 9 in.....	18	0	0	19	10	0
Battens.....	13	10	0	15	0	0
Second yellow deals, 3 in. by 11 in.	16	0	0	17	0	0
Do. 3 in. by 9 in.....	14	10	0	16	0	0
Battens.....	11	0	0	12	10	0
Third yellow deals, 3 in. by 11 in.	13	10	0	14	0	0
Do. 3 in. by 9 in.....	13	0	0	14	0	0
Battens.....	10	0	0	11	0	0
White Sea and Petersburg:—						
First white deals, 3 in. by 11 in.	14	10	0	15	10	0
,, ,, 3 in. by 9 in.	13	10	0	14	10	0
Battens	11	0	0	12	0	0
Second white deals, 3 in. by 11 in.	13	10	0	14	10	0
,, ,, 3 in. by 9 in.	12	10	0	13	10	0
,, ,, battens	9	10	0	10	10	0
Pitch-pine: deals.....	16	10	0	20	0	0
Under 2 in. thick extra	0	10	0	1	0	0
Yellow Pine—First, regular sizes	40	0	0	upwards.		
Oddments	28	0	0	,,		
Seconds, regular sizes.....	30	0	0	,,		
Yellow Pine oddments	25	0	0	,,		
Kauri Pine—Planks, per ft. cube .	0	3	6	0	5	0
Danzig and Stettin Oak Logs—						
Large, per ft. cube	0	2	6	0	3	6
Small ,, ,, ...	0	2	3	0	2	6
Wainscot Oak Logs, per ft. cube.	0	5	0	0	5	6
Dry Wainscot Oak, per ft. sup. as inch	0	0	8	0	0	9
¾ in. do. do.	0	0	7		—	
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch ...	0	0	9	0	1	0
Selected, Figury, per ft. sup. as inch	0	1	6	0	2	6
Dry Walnut, American, per ft. sup. as inch	0	0	10	0	1	0
Teak, per load	17	0	0	21	0	0
American Whitewood Planks, per ft. cube.....	0	4	0		—	
Prepared Flooring—	Per square.					
1 in. by 7 in. yellow, planed and shot	0	13	6	0	17	6
1 in. by 7 in. yellow, planed and matched	0	14	0	0	18	0
1¼ in. by 7 in. yellow, planed and matched	0	16	0	1	0	0
1 in. by 7 in. white, planed and shot	0	12	0	0	14	6
1 in. by 7 in. white, planed and matched	0	12	6	0	15	0
1¼ in. by 7 in. white, planed and matched	0	15	0	0	16	6
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0	11	0	0	13	6
1 in. by 7 in. do. do.	0	14	0	0	18	0
¾ in. by 7 in. white do. do.	0	10	0	0	11	6
1 in. by 7 in. do. do.	0	11	6	0	13	6

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £	s.	d.		£	s.	d.
Rolled Steel Joists, ordinary sections	5	15	0	...	6	15	0
Compound Girders, ordinary sections	7	12	6	...	8	15	0
Angles, Tees and Channels, ordinary sections	7	7	6	...	8	7	6
Flitch Plates	7	15	0	...	8	5	0
Cast Iron Columns and Stanchions including ordinary patterns	6	12	6	...	7	15	0

METALS.

	Per ton, in Londor. £	s.	d.		£	s.	d.
IRON—							
Common Bars	6	15	0	...	7	5	0
Staffordshire Crown Bars, good merchant quality.....	7	5	0	...	7	15	0
Staffordshire "Marked Bars"	9	10	0	...		—	
Mild Steel Bars.....	8	5	0	...	8	15	0
Hoop Iron, basis price	8	15	0	...	9	0	0
,, ,, Galvanized	16	10	0	...		—	
(*And upwards, according to size and gauge.)							
Sheet Iron, Black—							
Ordinary sizes to 20 g.	9	0	0	...		—	
,, ,, 24 g.	10	0	0	...		—	
,, ,, 26 g.	11	15	0	...		—	
Sheet Iron, Galvanised, flat, ordinary quality—							
Ordinary sizes—6 ft. by 2 ft. to 3 ft. to 20 g.....	12	0	0	...		—	
Ordinary sizes to 22 g. and 24 g.	12	10	0	...		—	
,, ,, 26 g.	13	10	0	...		—	
Sheet Iron, Galvanised, flat, best quality—							
Ordinary sizes to 20 g.	15	0	0	...		—	
,, ,, 22 g. and 24 g.	15	10	0	...		—	
,, ,, 26 g.	17	0	0	...		—	
Galvanised Corrugated Sheets—							
Ordinary sizes 6 ft. to 8 ft. 20 g.	12	0	0	...		—	
,, ,, 22 g. and 24 g.	12	10	0	...		—	
,, ,, 26 g.	13	5	0	...		—	
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	11	0	0	...		—	
Best Soft Steel Sheets, 22 g. & 24 g.	12	0	0	...		—	
,, ,, ,, 26 g.....	13	5	0	...		—	
Cut nails, 3 in. to 6 in.....	8	10	0	...	9	0	0
(Under 3 in., usual trade extras.)							

PRICES CURRENT—*Continued on page 51.*

COMPETITIONS AND CONTRACTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

COMPETITIONS.

Nature of Work.	By whom Required.	Premiums.	Designs to be Delivered
*Sketch Plans for Four Artisans' Cottages	Wembley U.D.C.	3*l.* 3s.	Feb. 8
*Designs and Plans for New Public Elementary School	C.B. of Preston	50*l.*, 30*l.*, and 20*l.*	Feb. 28
*Plans for New Billiard Room, Library, etc.	D. H. Rhiner-Waring	Not stated	No date.

CONTRACTS.

Nature of Work or Materials.	By whom Advertised.	Forms of Tenders, etc., supplied by	Tenders to be Delivered
Paint., etc, Old Nurses' Home, Withington Wkhse.	Chorlton Guardians	Porter at Union Offices, All Saints, Manchester	Jan. 12
Sinking Test Borehole	Wing R.D.C.	Sands & Walker, Engineers, Milton-chbrs, Milton-st., Nottingham	do.
Dutch Barn, Chester Court Hall, Selby		Thompson & Kirton, Architects, Exchange-bldgs., Lowgate, Hull	Jan. 13
Sewage Connexions, Catcliffe	Rotherham R.D.C.	J. Platts, Surveyor, High-street, Rotherham	Jan. 14
Alter., etc., Blind Institution, West-street, Sheffield		E. Winder, Architect, Corn Exchange-chambers, Sheffield	do.
Hartshill Stones, Granite, and Slag	Brackley R.D.C.	W. J. Treadwell, District Surveyor, Middleton Cheney, Banbury	do
Slag	do.	do.	do.
Thirty Beehive Coke Ovens	Mirfield Colliery Co.	Dark Lane Colliery	do.
Chimney, 100 ft. high		do.	do.
Works at Isolation Hospital, Oulton	Oulton Hospital Committee	Ollev & Haward, Architects, 5, Queen-street, Great Yarmouth	Jan. 16
Hartshill Stone	Woodstock R.D.C.	A. H. Higgs, Clerk to Council, Woodstock	do.
Playgrounds, etc., High Brooms New Schools	Kent Education Committee	W. Harmer, Surveyor, 137, London-road, Southborough	do.
Boys' School at Romilly-road, Barry	Barry U.D.C.	G. A. Birkenhead, Architect, Caledonian-chambers, Cardiff	do.
Entrance, R., etc., Nanthir Council Sch., Blaengarw.	Glamorgan C.C.	At Blaengarw Council School	do.
Foundations and Basewalls of Casual Wards, etc.	Guildford Guardians	E. L. Lunn, Architect, 36, High-street, Guildford	do.
Desks and School Furniture	Salford Education Committee	Director of Education, Chapel-street, Salford	do.
40 tons of White Lead	Bengal and N.W. Ry. Co., Ltd.	A. Izat, 237, Gresham House, Old Broad-street, London, E.C.	do.
Furnishing at School of Art, Anlaby-road	Hull Education Committee	J. T. Riley, Education Offices, Albion-street, Hull	do.
Dwelling House, Ordnance-street Site	Devonport Town Council	J. F. Burns, Borough Surveyor, 29, Ker-street, Devonport	do.
*Making-up Edgware-road	Hendon U.D.C.	Council's Engineer, Council Offices, Hendon, N.W.	do
Spikes and Bearing Plates for Rails	Secretary of State for India	Director General of Stores, India Office, Whitehall, S.W.	Jan. 17
Steel Materials	Southern Mahratta Rly. Co., Ltd.	E. Z. Thornton, Secretary, 46, Queen Anne's-gate, S.W.	do.
600 pairs of Wheels and Axles	do.	do.	do.
Orna. Pond, etc., at Boston-hill, nr. Hebden Bridge		J. Judson & Hudson, Architects, Oakworth, near Keighley	do.
Scavenging	Hambledon R.D.C.	F. Smallpeice, 138, High-street, Guildford	do.
Stores	Bombay, Baroda, etc., India Rly. Co.	T. W. Wood, Sec., Gloucester-hse., Bishopsgate-st. Without, E.C.	do.
Extension of Goods Offices at Llanelly Station	Great Western Railway Co.	Engineer, at Neath Station	do.
500 tons of Unbroken Guernsey Granite	Croydon Guardians	H. List, Clerk, Union Offices, Mayday-rd., Thornton Heath, Surrey	do.
Earthwork, near Wolverhampton	Great Western Railway Co.	Engineer at Wolverhampton Station	do.
Kerbing Works, Spennymoor, Durham	Spennymoor U.D.C.	C. R. Spencer, Surveyor, Council Offices, Spennymoor	do.
3,500 tons of Aberdeen Granite Pitchers	Bermondsey Borough Council	F. Ryall, Town Clerk, Town Hall, Spa-road, S.E.	do.
*Construction of Sewers, etc.	Willesden District Council	Council's Engineer, Dyne-road, Kilburn, N.W.	do
Dressing Rooms at Receiv. Wds., Crumpsall Wkhse.	Manchester Guardians	A. J. Murgatroyd, Architect, 23, Strutt-street, Manchester	Jan. 18
Technical Instruction Room at Swinton Schools	do.	do.	do.
Spiral Springs, etc.	East Indian Railway Co.	C. W. Young, Secretary, Nicholas-lane, London, E.C.	do.
Granite or Similar Stone	Meriden R.D.C.	A. Seymour, Clerk, 11, Priory-street, Coventry	do.
Paints, etc.	Manchester Cleaning Committee	R. Williamson, Town Hall, Manchester	do.
12 Penstocks and 58 Sluice Valves, etc.	Harrogate Corporation	E. W. Dixon, Engineer, 14, Albert-street, Harrogate	do.
Five Cottages, Duke-street, Skipton	Skipton Co-operative Society, Ltd.	J. Hartley, Architect, Skipton	do.
Pipes for Water Mains, Bembridge Waterworks	Isle of Wight R.D.C.	H. E. Stratton, Clerk, R.D.C. Offices, Pyle-street, Newport, I.W.	do.
Excavating for and Laying Pipes	do.	do.	do.
727 yds. of Sewer Works	do.	do.	do.
Turf for Open Spaces	Fulham Borough Council	F. Wood, Borough Engineer, Town Hall, Fulham	do.
Widening and Improving Glyn-Neath-road	Glamorgan C.C.	County Police Station, Neath	do.
Excavating, etc., Gaythorn Station, Elevated Rly.	Manchester Gas Committee	J. G. Newbigging, Engineer, Rochdale-road Station, Manchester	Jan. 19
Church at Miskin, Llantrisant		E. M. Bruce Vaughan, Architect, Cardiff	do.
*Supply of Concrete and Stoneware Pipes	Sutton (Surrey), U.D.C.	C. Chambers Smith, Sutton, Surrey	do.
Scout Moor High-Level Reservoir	Bury and District Joint Water Board	J. Cartwright, Engineer, Peel-chambers, Bury, Lancs.	Jan. 20
Ogden Reservoir	do.	do.	do.
Stores	Rochdale Canal Co.	80, Dale-street, Manchester	do.
Drainage at Fusehill Workhouse	Carlisle Board of Guardians	G. Armstrong, Architect, 24, Bank-street, Carlisle	do.
Fencing, etc., of New Burial Ground, Carnmoney	Belfast R.D.C.	J. W. Robb, Clerk, Union Workhouse, Belfast	do.
700 yds. Water Mains at Blaenclydach	Rhondda U.D.C.	O. Thomas, Engineer, Gas & Water Offices, Pentre, R.S.O., Glam.	do.
Workmen's Houses, Hill-street, Elgin		J. Wittet, Architect, Elgin	do.
3½ miles of C.-I. Water Pipes (Blackwood Water)	Lancashire C.C.	Warren & Stuart, Engineers, 94, Hope-street, Glasgow	do.
Hartshill Stones, Granite, and Slag	Middleton Cheney R.D.C.	W. J. Treadwell, District Surveyor, Middleton Cheney, Banbury	Jan. 21
Weslevan Chapel at Harehills, Leeds		J. W. Thackray, Architect, 4, Greek-street, Leeds	do.
Additions, etc., to Pendoylan National Schools		E. J. Williams, F.R.I.B.A., 17, Quay-street, Cardiff	do.
Broken Stone for Repair of Highways	Rugby U.D.C.	D. G. Macdonald, Surveyor to Council, Rugby	do.
Eight Heavy Motor Cars	Bridges and Roads Com., Kent C.C.	County Surveyor, Maidstone	do
Buildings in the Concourse at Glasgow Central Statn.	Caledonian Railway Co.	Engineer, Buchanan-street Station, Glasgow	Jan. 23
Cottage Homes for Children at Billericay	Billericay Guardians	C. E. Lewis, Clerk, New-road, Brentwood	do.
Team Labour on Streets and Roads	Whitley and Monkseaton U.D.C.	J. Moore, Surveyor, Council-buildings, Whitley Bay	do.
Labour and Cartage for Scavenging	do.	do.	do.
Street Works, Romford	Romford U.D.C.	H. T. Ridge, Council Offices, Market-place, Romford	do.
C.-I. Pipes, Derwent Aqueduct (Contract No. 4)	Derwent Valley Water Board	O. B. Steward, Clerk, Bamford, via Sheffield	do.
*Roadmaking, etc.	Beckenham U.D.C.	Council's Surveyor, Council Offices, Beckenham	do.
*Pav. Rdys., Hollington & Sultan St. wi. Mastic Asph. Materials	Camberwell Borough Council	Borough Engineer, Town Hall, Camberwell, S.E.	do.
Infectious Diseases Hospital, Exhall	Bourne R.D.C.	A. J. Metcalfe, District Surveyor, West-street, Bourne	Jan. 24
Doors and Screens to Dressing Boxes at Baths	Foleshill R.D.C.	T. F. Tickner, Architect, High-street-chambers, Coventry	do.
School at Shiremoor, Earsdon U.D.C.	Leeds Corporation	City Engineer's Office, Leeds	do.
Road Works, Barking Town	Northumberland Education Comm.	J. A. Bean, County Surveyor, The Moot Hall, Newcastle-on-Tyne	do.
100 Steel-covered Goods Waggons	Barking Town U.D.C.	C. F. Dawson, Surveyor, Public Offices, Barking	do.
200 pairs of Spoke Wheels and Axles	South Indian Railway Co., Ltd.	H. W. Notman, 55, Gracechurch-street, London, E.C.	do.
400 Laminated Bearing Springs	do.	do.	do.
North Aisle, St. James' Church, Arnside, nr. Kendal	do.	do.	do.
Extensions to Switchboard Gallery, etc., Ley-street		R. Morton Rigg, Architect, Arnside, near Kendal	do.
Street Works, Thornton Heath and Upper Norwood	Ilford U.D.C.	H. Shaw, Surveyor, Town Hall, Ilford	do.
*Sewering, etc., Aldermary and Wendover-roads	Croydon Corporation	Borough Road Surveyor's Office, Town Hall, Croydon	do.
*Refresh. Pavs., etc., Bruce Cas., Downhills, Ch'tnuts Pk.	Bromley Borough Council	Borough Engineer, Municipal Offices, Bromley, Kent	do.
*Mak'g-up Crowland, etc. Roads and Woodside-gdns.	Tottenham U.D.C.	Council's Engineer, 712, High-street, Tottenham	do.
Alterations, etc., to Schoolbuildings, High-st., Over	do.	do.	do.
Lock-up at Tideswell	Sub-Committee for Winsford District	H. Beswick, County Architect, Newgate-street, Chester	Jan. 25
Council House and Library	Derbyshire C.C.	J. Somes Story, County Sur., County Offices, St. Mary's-gate, Derby	do.
Repairs at the Ferry Fryston, New Fryston, Schools	Erdington U.D.C.	G. Kenwrick, F.S.I., 73, Colmore-row, Birmingham	do.
Conversion of Laundry-room into Classroom	Education Com., West Riding C.C.	J. Vickers-Edwards, County Architect, County Hall, Wakefield	do.
Repairs at the Ferry Fryston, Ferrybridge, School	do.	do.	do.
*Annual Contracts	do.	do.	do.
	M.B. of Chelsea	Borough Surveyor, Town Hall, King's-road, Chelsea, S.W.	do.

CONTRACTS.—*Continued.*

Nature of Work or Materials.	By whom advertised.	Forms of Tender, etc., supplied by	Tenders to be Delivered
Iron and Steel Work at Gaythorn Station	Manchester Gas Committee	J. G. Newbigging, Engineer, Rochdale-road Station, Manchester	Jan. 26
Sewage Works, Ely and Fairwater-grove, Llandaff	Llandaff and Dinas Powis R.D.C.	Baldwin Latham, Engineer, Parliament-mans., Victoria-st., Westm.	do.
13,200 sq. yds. of Tar Paving in Playgrounds	Pontypridd U.D.C.	P. R. A. Willoughby, Engineer to Council, Pontypridd	do.
Granite and Slag	Spilsby R.D.C.	T. A. Busbridge, District Surveyor of Highways, Spilsby	Jan. 27
Cast-Iron Pipes (Masham Scheme)	Harrogate Corporation	E. W. Dixon, Engineer, 14, Albert-street, Harrogate	Jan. 28
Steel Pipes (Masham Scheme)	do.	do.	do.
5,000 tons Portland Cement	do.	do.	do.
Materials, Cartage, etc.	Hertfordshire C.C.	N. A. Smith, County Surveyor, Hatfield	do.
School, etc., Grange, Rhos, near Ruabon	Denbighshire Educational Authority	W. Slater, Architect, 9, High-street, Wrexham	do.
Road Stone, etc.	Worcester Highways Committee	J. H. Garrett, County Road Surveyor, Shirehall, Worcester	do.
220 lineal yds. Dwarf Stone Wall, etc., Bitton Hill	Teignmouth U.D.C.	C. F. Gettings, Surveyor, Town Hall, Teignmouth, S. Devon	do.
Scavenging	Steyning West R.D.C.	E. Cripps, Union Offices, New Shoreham	Jan. 30
Iron Fire Escape Staircase, etc.	Blything Guardians	H. A. Mullens, Union Offices, Bulcamp, Halesworth, Suffolk	do.
Public Library, Selby Oak	King's Norton and Northfield U.D.C.	A. W. Cross, Surveyor, 23, Valentine-road, King's Heath	do.
Public Library, Stirchley	do.	do.	do.
Construction of the Carno Reservoir	Ebbw Vale U.D.C.	G. F. Deacon, Engineer, 16, Gt. George-street, Westminster, S.W.	Jan. 31
Coal Conveyor, Shutes, etc.	Halifax Tramways, etc., Committee	W. M. Rogerson, Borough Electrical Engr., Foundry-st., Halifax	do.
Power & Lighting Circuits & Fittings in Gener. Sta.	Handsworth U.D.C.	H. Ward, Clerk, The Council House, Handsworth, nr. Birmingham.	Feb. 2
Pipework, Feed Pumps, Economiser, etc.	do.	do.	do.
Electricity Meters	do.	do.	do.
Stores for Works Committee	Wallasey U.D.C.	W. H. Travers, District Engr., Public Offices, Egremont, Cheshire	Feb. 4
Extension of East Pier, Kirkcaldy	Kirkcaldy Town Council	W. L. Macindoe, Town Clerk, Kirkcaldy	do.
*Compl. Nave & Bld. Tower, St. Mi.'s Ch., Aberystwyth	The Committee	Nicholson & Hartree, Hereford	do.
Works at Cape Clear, County Cork	Board of Works, Ireland	H. Williams, Secretary, Office of Public Works, Dublin	Feb. 17
Tramways (three parts)	South Shields Corporation	J. Moore Hayton, Town Clerk, South Shields	Feb. 20
2,000 tons of Steel Rails	Brisbane Commissioners for Rlys.	Agent-General for Queensland, 1, Victoria-street, London	Mar. 7
168 tons of Steel Fish Plates	do.	do.	do.
*Supply of Goods and Subsidiary Works	London C.C.	Manager of Works, London County Council, Belvedere-road, S.E.	No date.
6,000 tons of Granite Setts	Cape Town Corporation	Davis & Soper, 54, St. Mary Axe, London, E.C.	do.
Rebuilding Her Majesty's Theatre	Carlisle Public Hall Co.	W. H. Bendle & W. Hope, Archs., 33, Grainger-st.-west, Newc.-T.	do.
Alterations, etc., to Premises, Abbey-street, Carlisle	Cumberland C.C.	G. D. Oliver, County Architect, Carlisle	do.
Detached Residence near Raikes-road, Skipton	.....	J. W. Broughton, Architect, 19, High-street, Skipton	do.
Heating Crigglestone Co-operative Society's Stores	.....	At the Stores, Crigglestone, Yorkshire	do.
*Alterations to Workhouse, Salmon-lane, Ratcliffe, E.	Stepney Guardians	J. & W. Clarkson, 136, High-street, Poplar, E.	do.

Those marked with an (*) are advertised in this number. *Competitions*, iv. *Contracts*, iv. vi. viii. x. *Public Appointments*, xviii.

PRICES CURRENT—*Continued from page 49.*

LEAD, &c.

	Per ton, in London. £ s. d.		£ s. d.
LEAD—Sheet, English, 3lb. and up	15 12 6	...	—
Pipe in coils	16 2 6	...	—
Soil pipe	18 12 6	...	—
Compo pipe	18 12 6	...	—
ZINC—Sheet—			
Vieille Montagne ....ton	30 15 0	...	—
Silesian	30 10 0	...	—
COPPER—			
Strong Sheet....per lb.	0 0 10	...	—
Thin „ .... „	0 0 11	...	—
Copper nails .... „	0 0 10	...	—
BRASS—			
Strong Sheet.... „	0 0 9½	...	—
Thin „ .... „	0 0 10	...	—
TIN—English Ingots .... „	0 1 4½	...	—
SOLDER—Plumbers' .... „	0 0 6½	...	—
Tinmen's.... „	0 0 8	...	—
Blowpipe.... „	0 0 9	...	—

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2¾d. per ft. delivered.
„ fourths	2d. „ „
21 oz. thirds	3¾d. „ „
„ fourths	3d. „ „
26 oz. thirds	4¾d. „ „
„ fourths	3¾d. „ „
32 oz. thirds	5¾d. „ „
„ fourths	5d. „ „
Fluted Sheet, 15 oz.	3¼d. „ „
„ 21 oz.	4¼d. „ „
½ Hartley's Rolled Plate	2d. „ „
⅜ „ „ „	2¼d. „ „
½ „ „ „	2½d. „ „

OILS, &c.

		£ s. d.
Raw Linseed Oil in pipes	per gallon	0 1 5
„ „ „ in barrels	„	0 1 6
„ „ „ in drums	„	0 1 8
Boiled „ „ in pipes	„	0 1 7
„ „ „ in barrels	„	0 1 8
„ „ „ in drums	„	0 1 10
Turpentine, in barrels	„	0 3 4
„ in drums	„	0 3 6
Genuine Ground English White Lead	per ton	19 15 0
Red Lead, Dry	„	19 5 0
Best Linseed Oil Putty	per cwt.	0 6 6
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 0
Fine Elastic Carriage	0 12 6
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 16 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flatting Varnish	0 18 0
White Copal Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 6
Berlin Black	0 16 0
Knotting	0 10 0
French and Brush Polish	0 10 0

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TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

BATH.—For the enlargement of Bath Station Sorting Office, for the Commissioners of H.M. Works and Public Buildings :—

		Credit old materials.
A. Wills & Sons	£1,969 0	£90
Hayward & Winter	1,775 0	65
J. Long & Sons	1,491 0	98
A. J. Colborne*	1,419 4	70

BRADFORD.—For erecting a steam boiler chimney at the Royal Infirmary. Mr. F. Holland, engineer and architect, 11, Parkinson's-chambers, Hustlergate, Bradford :—

W. R. Booth, Clayton, Bradford* £675

CHELTENHAM.—For sewerage works in the parish of Prestbury, for the Rural District Council. Mr. Nicholson Lailey, engineer, The Sanctuary, Westminster :—

J. Riley	£5,353 19 3	J. Dickson	£2,756 0 0
W. Cresswell	3,800 0 0	Johnson Bros.	2,576 0 0
J. & T. Binns	3,516 1 10	M. Williams & Co.	2,466 17 8
R. H. B. Neal, Ltd.	3,397 0 0	W. Wheeler, 235, Blackfriars-road, Southwark, S.E.*	2,417 6 7
R. Shelley, jun.	3,000 0 0		
J. Jackson	2,895 2 6		
G. Wimpey & Co.	2,884 0 0		

CROYDON.—For proposed alterations at "Knighton," Pampisford-road, Croydon. Mr. Frank Windsor, architect, 1, High-street, Croydon :—

D. W. Barker ..... £198 | W. J. Bailey† £185

[Both of Croydon.]

CROYDON.—For the erection of eight houses and office at Anchor-place, Croydon. Mr. Frank Windsor, architect, 1, High-street, Croydon :—

E. J. Saunders, Croydon* £2,925

CROYDON.—For the erection of a detached house in Lismore-road, Croydon. Mr. Frank Windsor, architect, 1, High-street, Croydon :—

Sedgewick Bros. .... £839 | Pearson & Co. £735
J. Everitt ..... 743 | W. Gowman† 733

[All of Croydon.]

CROYDON.—For the erection of girls' meeting hall, Bynes-road, South Croydon. Mr. Frank Windsor, architect, 1, High-street, Croydon :—

T. Wawman ..... £223 6 | R. Rex £173 0
J. Pursley ..... 195 0 | W. Gowman* 146 0

[All of Croydon.]

DARTMOUTH.—For erecting public slaughter houses at Great Ridges, for the Corporation. Mr. A. Smith, Borough Engineer and Surveyor, Victoria-chambers, Dartmouth :—

R. H. Watts .. £862 9 0 | Wills & Anderson,
R. C. Pillar .... 849 14 6 | Dartmouth* .. £838 11 8

ELTHAM.—For proposed new stabling for Messrs. T. Tilling, Ltd., at Eltham, Kent. Messrs. Gilbert & Constanduros, architects, 43, Finsbury-square, E.C. Quantities by Messrs. Batstone Bros., 110, Cannon-street, E.C. :—

Whistler & Worge	£7,202 0	Todd & Newman	£5,892 0
W. H. Wagstaff	6,352 0	J. Greenwood, Ltd.	5,868 0
F. G. Minter	6,224 0	C. P. Roberts	5,842 0
T. Rider & Son	6,078 0	D. & R. Kennard	5,839 0
W. Downs	6,035 0	Knight, Sidcup	5,813 10
Holiday & Greenwood	5,922 0		

HANDSWORTH.—For public baths, Handsworth. Mr. J. P. Osborne, architect, Birmingham :—

G. H. Marshall	£17,400	W. Sapcote & Sons	£15,488
J. Moffatt & Sons	17,400	J. Barnsley & Son	15,388
H. Willcock & Co.	16,885	W. H. Gibbs	15,151
C. Griffiths	16,750	J. A. Turton	15,099
W. Jackson	16,700	W. & J. Webb	15,044
J. E. Harper	16,020	W. Lee & Sons	14,999
C. A. Horton	15,994	J. Webb	14,989
J. Dallow & Sons	15,950	Gowing & Ingram	14,793
J. Parnell & Sons	15,888	B. Whitehouse & Sons	14,571
T. Rowbotham	15,885	T. Elvins, Nadenroad, Handsworth*	14,470
J. Langley	15,750		
W. Bishop	15,687		
G. Webb	15,655		
J. E. Hopkins	15,500		

HARROW-ON-THE-HILL.—For making-up Fairholme-road, for the Urban District Council. Mr. J. P. Bennetts, Engineer and Surveyor to Council, Harrow-on-the-Hill :—

R. C. Mayo	£772 1 1	J. Trueman	£666 0 0
H. Brown	729 0 0	Champniss	665 8 6
F. Thacker	721 15 3	T. Adams	662 9 7
F. Fowles	686 2 4	Free & Son, Maidenhead*	618 10 6
Wimpey & Co.	684 12 0		

[Surveyor's estimate, £658.]

LINSLADE.—For the sewerage works of the district, for the Urban District Council :—

W. H. Wheeler	£17,268 0 0	F. Ray	£11,969 0 0
W. G. Willmott	13,991 0 0	J. F. Price	11,850 1 9
J. Jackson	13,188 13 3	T. Yirrell	11,815 0 0
S. W. Harrison & Co.	12,860 0 0	A. Jewell	11,800 0 0
S. Redhouse, Sen.	12,837 0 0	Muirhead, Greig, & Matthews	11,702 0 0
W. Y. Green & Co.	12,822 0 0	Bower Bros.	11,695 0 0
Johnson Bros.	12,800 0 0	H. H. Barry	11,400 0 0
J. Byroms	12,623 0 0	J. W. Dean, Ltd.	10,980 0 0
G. Mackay & Son	12,596 11 1	J. J. Raynent & Son	10,975 0 0
C. Chamberlain	12,570 0 0	Siddons & Freeman	10,829 0 0
J. Riley	12,369 14 10	H. Brown, Watford*	10,560 0 0
		Haycock & Sons	10,380 0 0

LONDON.—For erecting a boat shed and workshops at South Wharf, Trinity-street, Rotherhithe, S.E., for the Metropolitan Asylums Board. Messrs. T. W. Aldwinckle & Son, architects, 20, Denman-street, London Bridge, S.E.:—

E. P. Bulled & Co.	£1,484	0	0
J. A. Renwick	1,475	0	0
R. L. Tonge & Co., Ltd.	1,391	6	2
W. Johnson & Co., Ltd.	1,298	0	0
W. Reason	1,290	0	0
Johnson & Co.	1,289	0	0
Aldridge & Son	1,189	19	0
Mordey & Myer	1,188	6	0
W. Lawrence & Son	1,044	0	0
W. J. Renshaw	1,023	0	0
H. Kent	1,012	5	0
J. Shelbourne & Co.	1,005	0	0
Thomas & Edge	997	0	0
A. White & Co.	978	0	0
C. Cruse & Co.	954	0	0
W. Harbrow Iron Building Works	940	0	0
B. E. Nightingale, Albert Embankment, S.E.*	875	0	0

NEWHAVEN.—For erecting an isolation hospital, etc., Lewes-road, for the Urban District Council. Mr. F. J. Rayner, architect, 34, Meeching-road, Newhaven:—

A. White & Sons	£7,353	10		Field & Co.	£5,830	0
J. G. Pickard	6,400	0		Peerless, Dennis, & Co.	5,769	0
J. Longley & Co.	6,125	0		Norman & Burt	5,692	0
R. Cooke & Sons	6,045	0		M. Woolger	5,640	0
J. Jarvis & Son	6,000	0		Godfrey Bros.	5,378	12
I Waters & Sons	5,998	0		J. Martin	5,200	0
Padgham & Hutchinson	5,935	0		C. Cooke, Newhaven*	5,085	0
Hockley & Co.	5,900	0				
F. Miskin	5,835	0				

PRESTON.—For road works, Kingfisher-street, etc., for the Corporation:—

Kingfisher-street from St. George's-road to Holmrook-road.
R. Bashall, Preston £323 9 10

Back-road, Brampton-street, and Elton-street.
Chadwick Bros., Preston £144 12 4

SWINTON.—For sewerage works extension, etc., for the Swinton and Pendlebury Urban District Council. Mr. H. Entwisle, Surveyor, Council Offices, Swinton, Manchester:—

Sewage Works Extension.

Edmunds & Co.	£4,181	3	0	Pollitt & Co.	£2,303	10	7
Monk & Newell	3,325	17	8	Etheridge & Clarke	2,268	15	8
M. Naylor & Sons	2,888	19	6	G. A. Watson & Co., Ltd.	2,225	7	10
Snape & Sons	2,830	14	0	Worthington	2,219	14	3
Johnson & Hindley	2,880	0	0	P. & S. Kearsley	2,193	5	11
G. W. Bell	2,648	0	8	H. Davies & Sons	1,970	6	2
A. Graham & Sons	2,470	0	0	S. Johnson & Son	1,961	0	0
J. Byrom	2,466	10	0	Musker Bros., Swinton*	1,898	3	10
R. Lomax	2,405	12	6				
W. Jowett	2,386	9	5				

For Sewer.

Monk & Newell	£5,751	13	8	G. W. Bell	£3,662	6	0
P. & S. Kearsley	4,044	12	0	Etheridge & Clarke	3,601	4	6
Johnson & Hindley	4,112	8	9	J. Byrom	3,489	10	0
Edmunds & Co.	4,009	10	6	A. Graham & Sons	3,220	0	0
W. Jowett	3,995	14	8	R. Lomax	3,049	3	9
G. A. Watson & Son	3,938	8	0	Snape & Sons	3,021	6	11
M. Naylor & Sons	3,758	7	0	Worthington	2,981	11	3
				H. Davies & Sons, Pendlebury*	2,908	6	9

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ESTIMATES GIVEN FOR EVERY DESCRIPTION OF ROAD MAKING.

PURLEY.—For the erection of billiard room in Brighton-road, Purley. Mr. Frank Windsor, architect, 1, High-street, Croydon:—

W. Walker, Purley .. £580 | W. Pearson & Co. .. £435

PURLEY.—For the erection of stable in Brighton-road, Purley. Mr. Frank Windsor, architect, 1, High-street, Croydon:—

W. Walker, Purley .. £490 | W. Pearson & Co. .. £420

SOUTHWICK.—For the construction of surface water sewers at Fishergate, for the Urban District Council. Mr. G. W. Warr, Surveyor, Council Offices, Southwick. Quantities by Surveyor:—

J. G. Pickhard	£542	0	0.	Woolgar Bros.	£368	5	6
J. A. East	538	3	0	Peerless, Dennis, & Co.	358	10	0
Parsons & Sons	458	0	0	W. A. McKellar, Hove*	308	0	0
E. King	416	9	10				
Porter & Co.	409	0	0				

WALSALL.—For a new road from Lichfield-street to Darwall-street, etc., for the Corporation:—

H. Holloway, Bilston-road, Wolverhampton* £1,017

WALTHAMSTOW.—For alterations and additions to Gamuel-road Schools, for the Walthamstow Education Committee. Mr. H. Prosser, Architect and Surveyor, Architect's Department, Education Committee Offices, High-street, Walthamstow, N.E.:—

J. Shelbourne & Co.	£6,597		Myall & Upson	£6,100	
Stimpson & Co.	6,498		B. E. Nightingale	6,000	
W. Shurmur & Sons	6,489		J. & J. Dean	5,871	
Treasure & Son	6,404		Foster Bros.	5,822	
W. Lawrence & Son	6,383		A. G. Barton	5,813	
H. Knight & Son	6,355		Hammond & Son	5,775	
J. & M. Patrick	6,279		W. Manders	5,550	
A. G. Crisp	6,250		Rowley Bros.	5,500	
Pollard & Brand	6,250		R. & E. Evans	5,477	
Martin, Wells, & Co., Ltd.	6,119		W. J. Maddison, Canning Town*	5,429	

WEALDSTONE.—For making-up, etc., of Grant and Locket roads (up to Aberdeen-road), and Aberdeen, Stirling, and Rossilyn-crescent roads, for the Urban District Council. Mr. H. Walker, C.E., Surveyor, Council Offices, Wealdstone. Quantities by Surveyor:—

H. Higgins	£5,979	11	2	T. Free & Sons	£4,909	17	3
Fry Bros.	5,633	6	7	A. B. Champniss, Wealdstone*	4,683	3	9
H. Brown	5,516	9	3				
F. Fowles	5,195	9	11				
T. Adams	5,046	18	5				

WOBURN SANDS.—For the erection of new shop and stores, for the Woburn Sands Co-operative Society, Ltd. Mr. W. B. Stonebridge, architect, Woburn Sands and Woburn:—

G. Botsford	£997	M. Fleet	£840
W. T. Sharpe	977	Miles Bros.	779
H. Gregory	945	C. Sinfield*	762

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GROVND PLAN

SCALE OF FEET.

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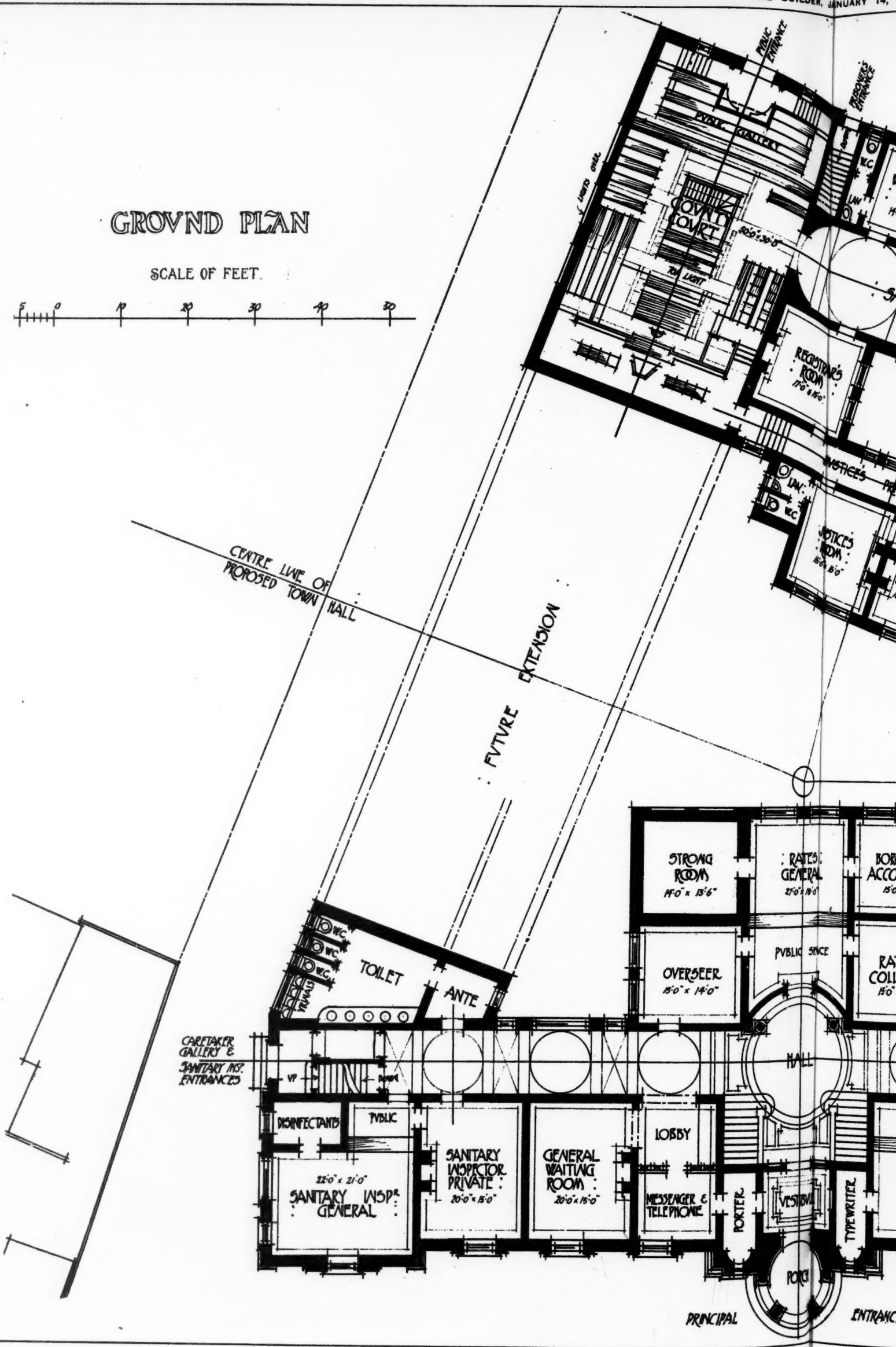


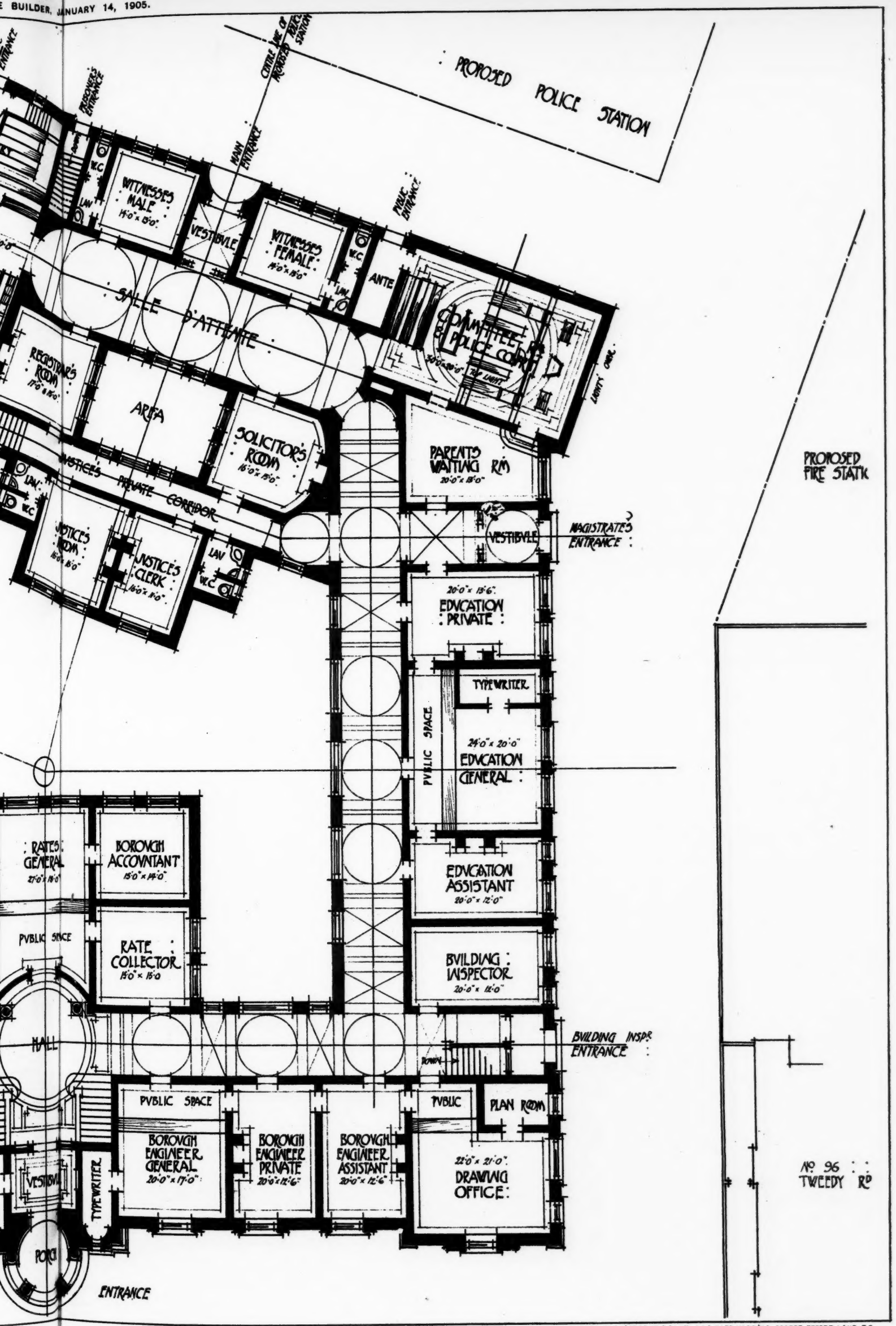
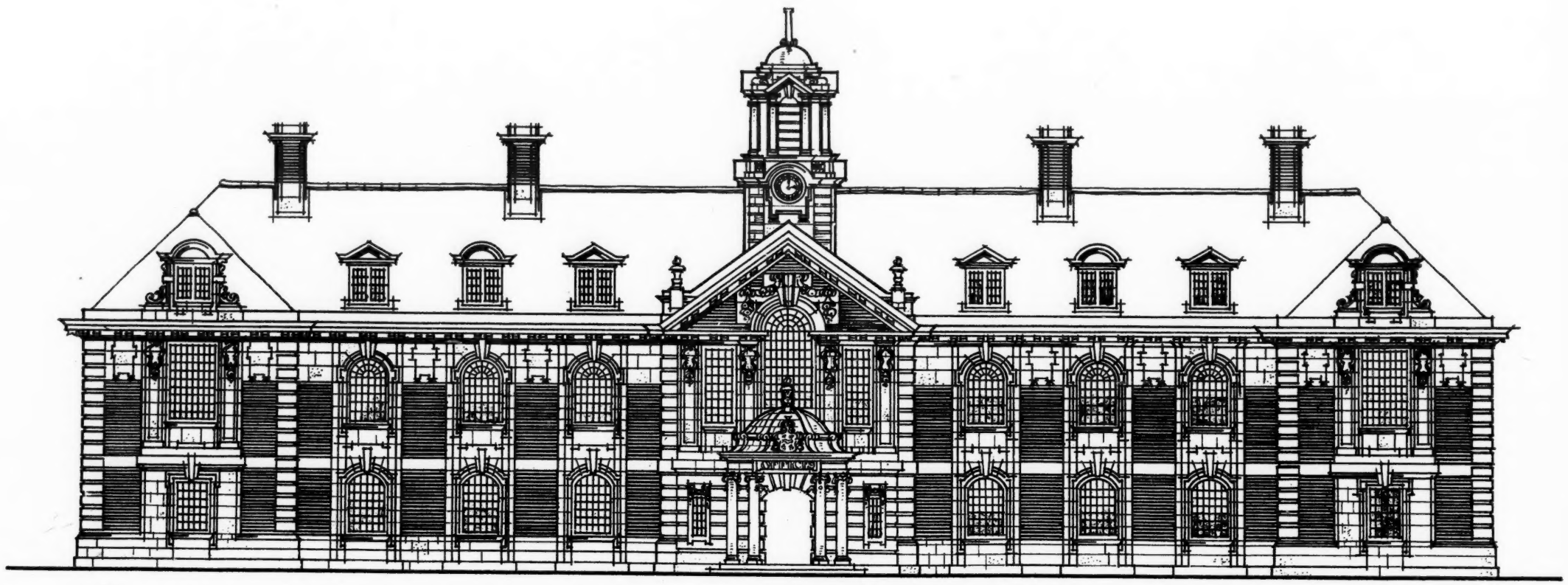


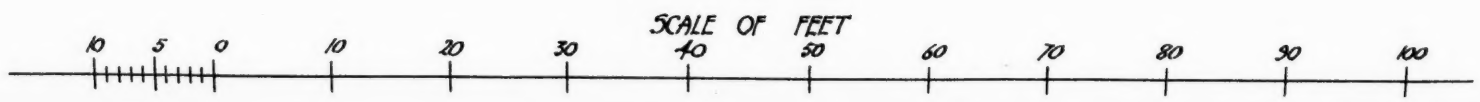
PHOTO-LITHO. SPRAGUE & Co. LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

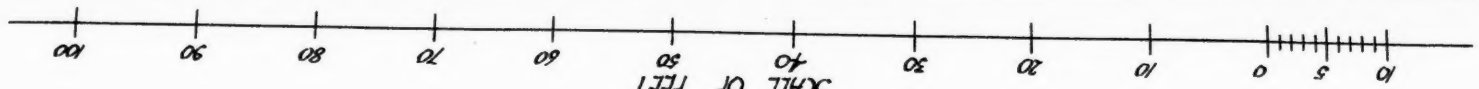
ETITION: FIRST PREMIATED DESIGN.—By Mr. R. F. Atkinson.

PVBLIC OFFICES BROMLEY



FRONT ELEVATION

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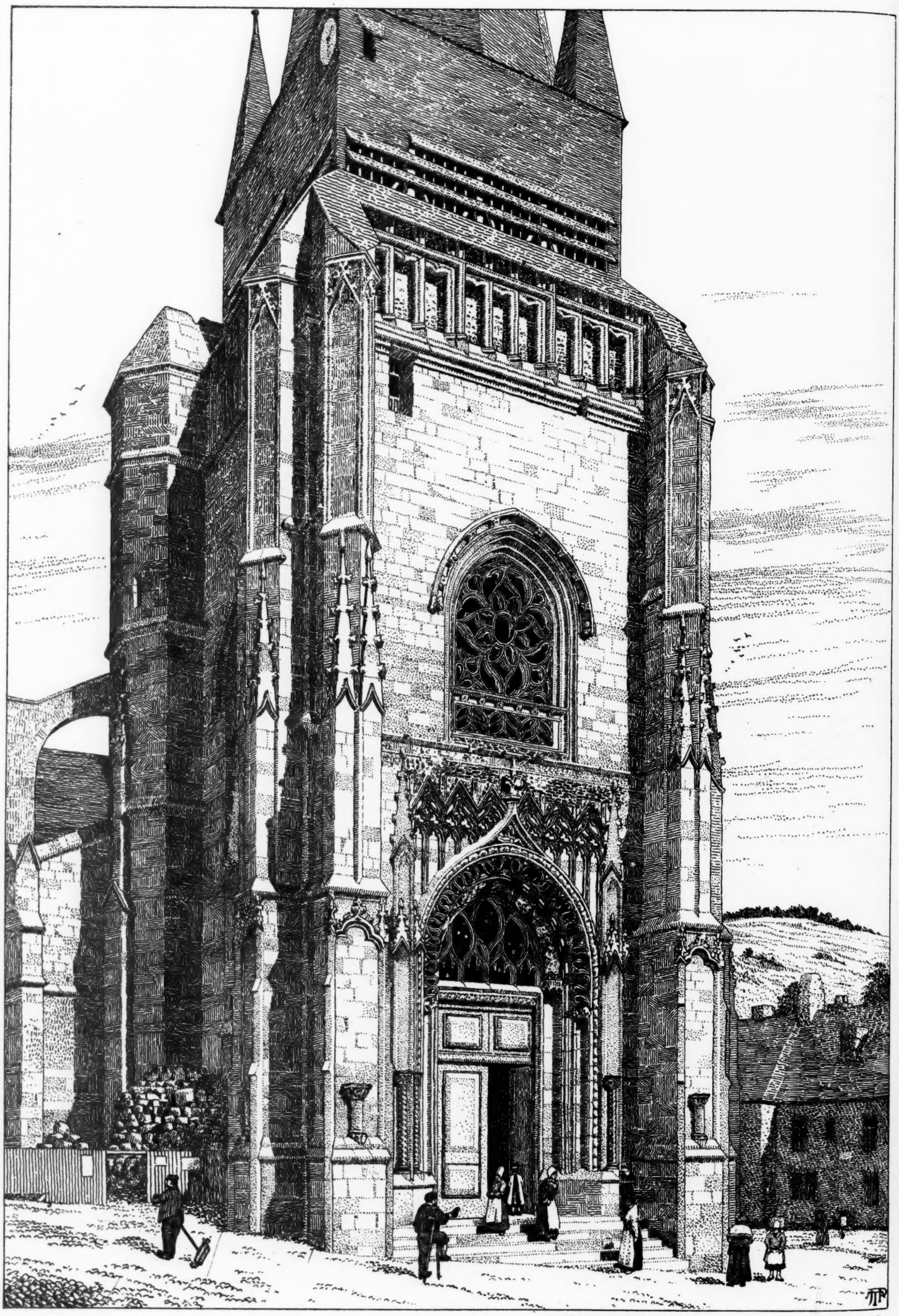
SCALE OF FEET



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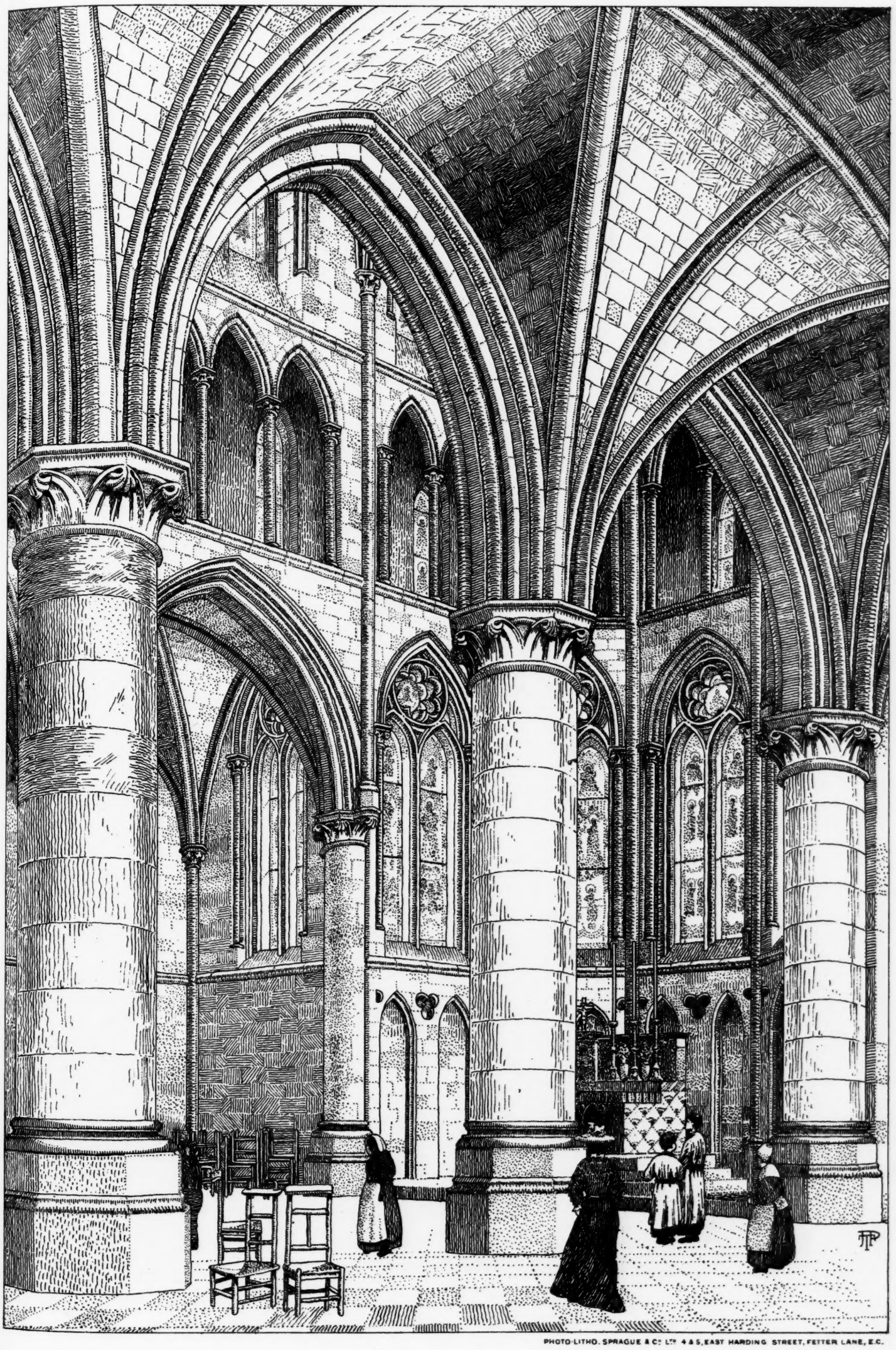
THE CHURCH OF NEUFCHÂTEL-EN-BRAY, FRANCE.—Drawn by Mr. J. Tavenor Perry.

EXTERIOR.



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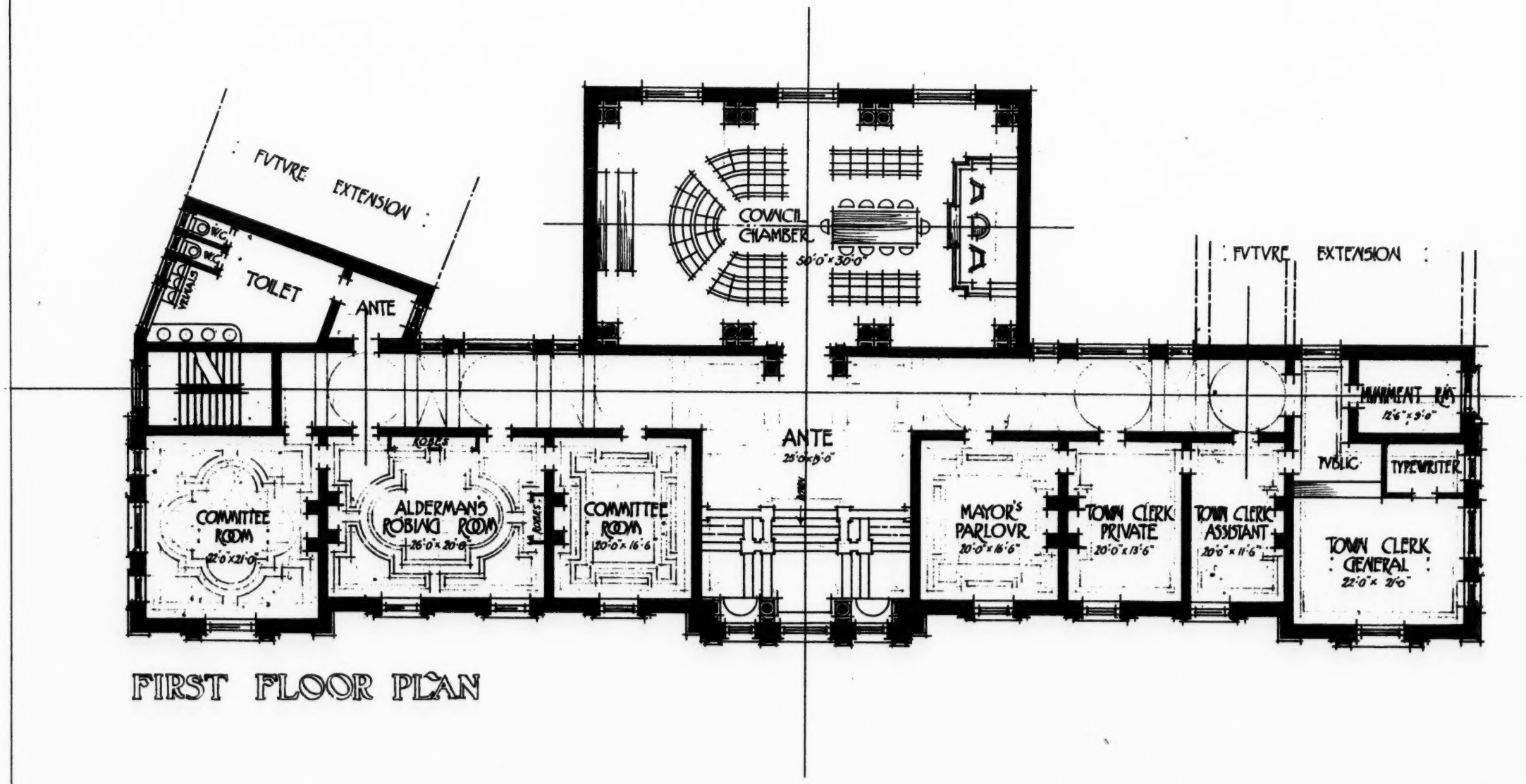
INTERIOR.



FIRST FLOOR PLAN

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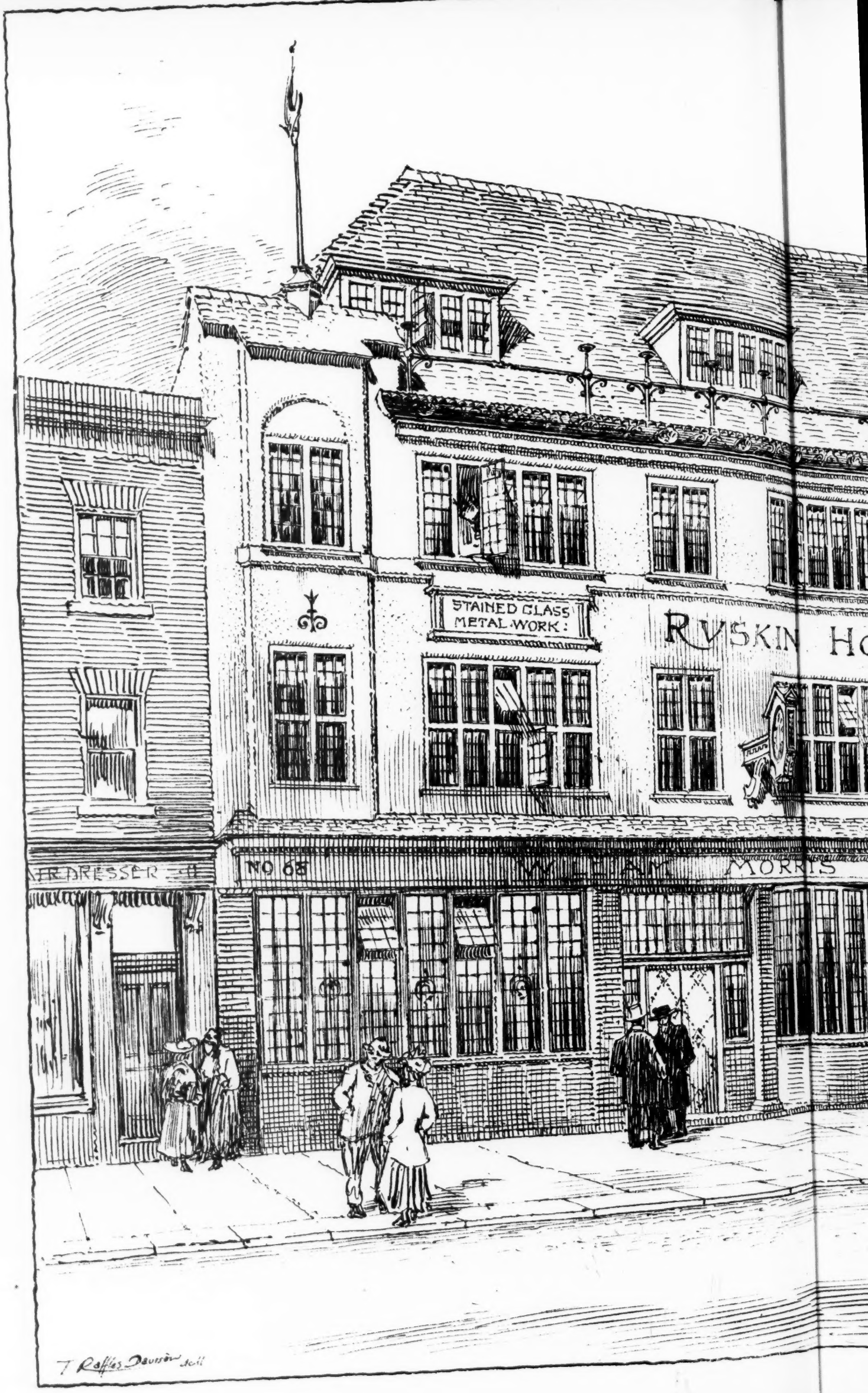
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NO 65
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